

# THE IRON AGE

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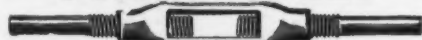
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# THE IRON AGE

New York, Thursday, February 27, 1908.

## The Krupp Works at Rheinhausen.

**Blast Furnaces, Coke Ovens, Bessemer and Open Hearth Steel Works, Two Blooming and Six Finishing Mills.**

(With Supplement.)

On the left bank of the Rhine, opposite the town of Duisburg-Hochfeld, the firm of Friedrich Krupp of Essen, Germany, acquired a large tract of land in the early '90s, in order to build a modern steel plant. The works at Essen, established near the outcrop of the Ruhr coal basin, had gradually devoted itself more particularly to war material, and the equipment for merchant material, rails, &c., had been allowed to become antiquated. With large iron ore interests in Spain and elsewhere, while considerable quantities were drawn from other foreign ore deposits, the location on the Rhine permitted the assembling of materials at low cost. The plant at Rheinhausen was visited in 1906 by members of the Iron and

### Docks and Ore Unloaders.

Parallel to the central line of the blast furnaces a harbor has been built, with a total length of 600 m., in order to accommodate the ore ships, and from its docks the products of the plant are loaded to be shipped by water. During the summer the depth of water in the harbor averages 4.77 m. The width of the harbor measured on the bottom is 60 m. The side nearest to the blast furnaces is lined with masonry for a length of about 470 m. For the handling of the ships there is a tug having a 250-hp. engine, capable of hauling boats with a load of 1000 tons.

The discharge of ore is taken care of by eight un-

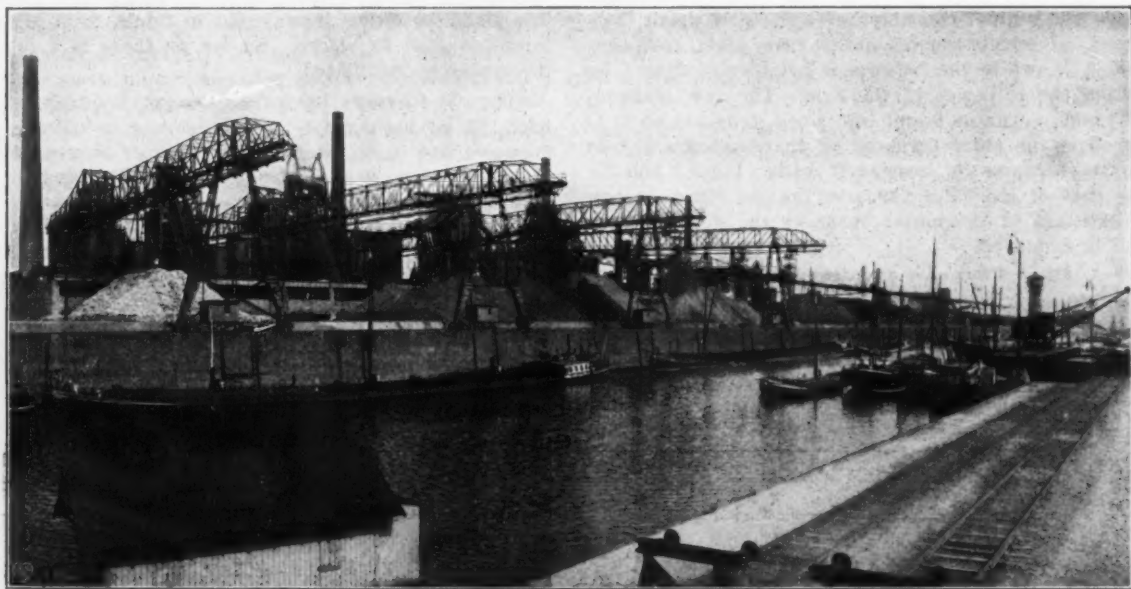


Fig. 1.—View of Harbor and Blast Furnaces.

Steel Institute, but the first complete technical account of it was not published until October, 1907, in *Stahl und Eisen*. We are indebted to that excellent journal for the facts given below and the accompanying illustrations.

The building of the works occupied three periods. From 1896 to 1898 three blast furnaces of 400 cu. m. capacity were built, together with the harbor and pumping plant. During 1903 to 1905 three additional blast furnaces were constructed, each of 600 cu. m. capacity, followed by a steel plant and rolling mill and the accessory shops. A fourth blast furnace of 600 cu. m. capacity was put up in 1906. The plant, therefore, now consists of seven blast furnaces, with a capacity of about 700,000 tons of pig iron per annum, a basic Bessemer steel plant with four 25-ton converters, a basic open hearth plant with two 25-ton furnaces completed and two of 35 tons planned and a rolling mill with two blooming and six finishing trains. The three older furnaces produced mainly Bessemer pig of different grades for the consumption of the firm in the steel plant at Essen and other plants like the Gruson Works near Magdeburg, the Germania Shipyards, the Annen Steel plant and the Sayner works. The four new blast furnaces exclusively serve the adjacent steel plant.

loaders (shown in Fig. 1), four of which were built in the United States, this having been the first installation of cranes of this type in Germany. The bridges have an inclined track. Four other unloaders were built in Germany, all of them having a span of 61.23 m. Under ordinary circumstances they deliver the ore into pockets located in front of the furnaces, but they can also serve tracks from the ships. They can also load ore from the ore pockets and from the ore storage yards into cars on standard tracks, which are parallel to the harbor wall. Along the eastern wall of the harbor on the side opposite to the blast furnaces are two unloading tracks, on which runs an electrically driven swing crane of 5 tons capacity.

The annual consumption of ore amounts to about 1,600,000 tons. These ores are drawn partly from the mines owned by the company on the Lahn River, in the Siegen District, and the Westerwald, in Lorraine, and in the north of Spain. A part of the supply is produced in Sweden and in Spain and there are also added to the burden cinder drawn from the firm's own works and from other sources. About one-half of the total quantity of ore, say 800,000 tons, is brought to the works by water, the other half being received by rail. The limestone re-



Fig. 2.—Ore Buckets and Locomotive for Conveying Them to Foot of Inclined Hoist.

quired amounts to about 220,000 tons per annum, which is obtained by rail from the firm's quarries in the Anger Valley. The annual consumption of coke is about 760,000 tons, of which the adjoining coke plant furnishes 190,000 tons, while the balance is principally drawn by rail from the collieries of the firm. The raw material for the blast furnaces is put into stock, from which it is conveyed to the older furnaces by charging cars and to the newer furnaces by suspended roads (Figs. 2 and 3). In the case of the older furnaces the old Parry system with bell and in the newer furnaces the double Parry system is employed.

#### Blast Furnaces and Gas Washers.

The older furnaces have a height of 28 m., while the new furnaces are 31 m. high. The old furnaces have eight tuyeres of 20 cm. diameter, and the new ones 12 tuyeres of 22 cm. diameter. The iron is cast into beds in the case of the old furnaces, while the iron for the

basic Bessemer steel plant is conveyed in liquid form to the mixers, except Sunday metal, which is cast in beds. The cinder is either transported in liquid form or is allowed to chill in blocks. So far as there is a demand the cinder is granulated.

The old furnaces have four Cowper hot blast stoves, each 31 m. high and 6 m. in diameter, while the new furnaces are equipped with five Cowper stoves 34¼ m. high and 6½ m. in diameter. The waste gases first flow through a preliminary cleaner, each furnace having two, one at the left and one at the right. At the older furnaces this preliminary cleaner consists of four stand pipes in series 2½ m. in diameter in the clear, which dip into a water seal. The three furnaces are supplied with a dust catcher, consisting of a large cylindrical drum 6½ m. in diameter and a system of stand pipes 3 m. in diameter in the clear, arranged in series behind it. The dust catcher and stand pipes are so placed that the dust



Fig. 3.—Coke Bucket and Pocket at Inclined Hoist.



may be easily removed from below. The last furnace built, No. 7, has two dust catchers, one behind the other, 6½ m. in diameter. The gas leaves the dust catchers with a percentage of dust equal to 5 to 10 gr. per cu. m. and enters a general line of pipe with which all furnaces are connected. This main pipe conducts the gases to wet cleaning plants, three of which are distributed along the line of the blast furnaces. One of the plants is shown in

parts, working alternately, this operation taking about an hour. The water then flows into the main clarifying ponds in which it remains for 5 hours.

#### Coke Ovens and Briquetting Plant.

Adjacent to the blast furnaces is a coke plant consisting of two groups of 60 ovens, having a capacity of 750 tons per day. The ovens have a total length of 10.25

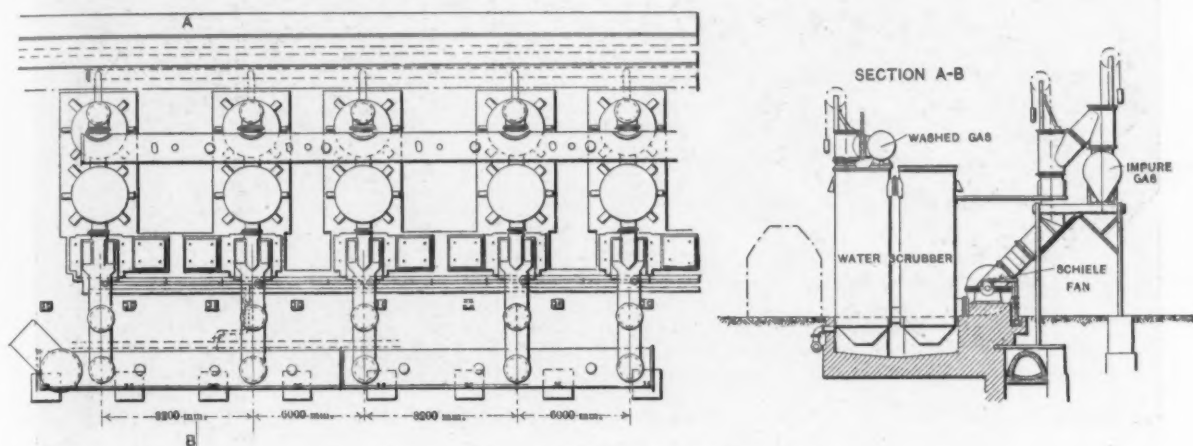


Fig. 4.—Plan and Section of Gas Washing Plant.

Figs. 4 and 5. They consist of a series of centrifugal fans with water injections. For each cubic meter of gas about 1 m. of water is required and a purification is reached from 5 to 10 gr. of dust per cu. m. in the furnace gas down to 0.3 to 0.7 gr. per cu. m. in the cleaned gas. This gas is partly employed to heat the boilers and hot blast stoves, and a part of it is conveyed to the second series of gas washers attached to the engine houses, where it is employed for driving gas motors after having been subjected to a second cleaning. The latter is carried out exactly the same way, centrifugal fans with water injection being employed. The gas

m., a height in the clear of 2.1 m. and an average width in the clear of 530 mm. The time required for coking is about 30 hr. The coal is delivered by rail into a pit holding 200 tons. From this two bucket elevators convey the coal to a tower having a capacity of 500 tons. The coal is discharged into cars which deliver into ovens from above. The coke pushing machines and the entire machinery for the coal towers is driven by electric motors.

The coke oven gases are handled in a by-product plant for the recovery of tar and ammonia, the latter being converted into sulphate of ammonia. Later on a benzole factory is to be built. That part of the gases from the



Fig. 5.—Gas Washer Between Furnaces 6 and 7.

leaves the second cleaning plant with a dust content of 0.02 to 0.08 gr. per cu. m. and is employed to drive the gas engines for the blowing engines, the electric central station and the rolling mills.

The waste water of the different gas washing plants is collected and clarified in ponds having a total area of about 6500 sq. m. The clarification is carried on in two ways: the first series of ponds serves to settle the coarser

coke ovens which is not needed for coking is used under boilers or may also be added to the blast furnace gas. The waste heat of the coke ovens is delivered to groups of 10 double flue boilers of 90 sq. m. heating surface. One of these groups is heated with coke oven gas and the other with blast furnace gas. The steam, as is the case with all the other boilers at the works, has a pressure of 9½ atmospheres and is heated to 300 degrees Celsius by a



Fig. 6.—Gas Blowing Engine House No. 2.

superheater. Provision has been made for a third group of 60 ovens, a further group of 10 boilers and a second coke and coal tower.

A briquetting plant has been put down to utilize the fine dust and the fine ores. It has a capacity of 40,000 briquettes in 24 hr., equal to a total of 50,000 tons per annum. The system is that of Doctor Schumacher. There are two mixing drums, two presses and three hardening boilers. The same plant may also be used for producing the same number of slag brick from melted slag, either with a slight addition of lime or without any addition whatever.

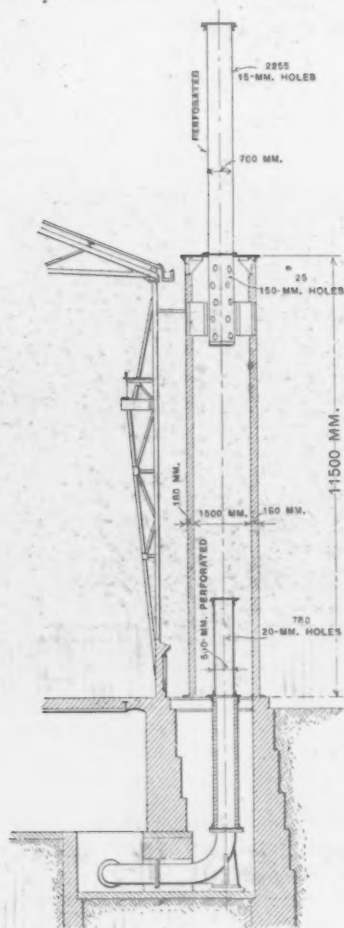


Fig. 7.—Muffler for Gas Engine Exhaust.

#### The Gas Engines.

To supply the blast for the furnaces in operation there are now 14 double gas blowing engines of approximately 1000 cu. m. capacity per minute and four vertical steam blowing engines, each of 840 cu. m. per min. Six of the gas blowing engines are built on the four cycle system and eight on the two cycle system. The engines are located in five gas engine houses. One of these houses is shown in Fig. 6. Four of the engines are of the Koerting two cycle type. The normal pressure is 0.75 atmosphere and the maximum  $1\frac{1}{2}$  atmospheres. A special appliance has been adopted in order to muffle the exhaust, which at first created some difficulties. The system is shown in Fig. 7, and consists of vertical boilers into which the waste gases from the gas cylinders enter from below. They have an opportunity to come to rest and then escape through the pipe suspended in the boiler from above. This arrangement has worked exceedingly well.

A compressor plant is provided for each of the gas blowing plants, which provides the necessary pressure for starting the engines. The compressor has a capacity of 50 cu. m. of air at the inlet valve when it is running at a speed of 215 rev. and delivering compressed air at 25 atmospheres.

An electric central station for power and light, Fig. 8, furnishes a current at 525 volt pressure for the whole plant and for the houses of officers and workmen. There are two drynamos of 205 kw. and six of 680 kw., which are all directly coupled to blast furnace gas engines. The first named are driven by double acting, single cylinder, four cycle motors of 3000 effective horsepower at 150 rev. per min. Four large generators are coupled with double acting tandem four cycle motors and two large generators are driven by two Oechelhäuser engines. The six large gas engines furnish normally 1000 hp. each, running at 100 rev. per min. A 15-ton traveling crane is operated for the installation of the machinery. Three compressors mounted along the wall and driven by electric motors through belting are provided for starting the gas engines.

#### Mixers and Basic Bessemer Converters.

The pig iron produced by the furnaces is delivered by steam locomotive in cars carrying 30 to 35 tons to the mixer at the basic Bessemer steel plant. The cars are weighed and by an hydraulic elevator are conveyed to the upper platform where an electric locomotive takes care of unloading in the mixer house. The ladle cars are tilted by a motor located under the ladle and their contents emptied into the mixer. There are two rolling



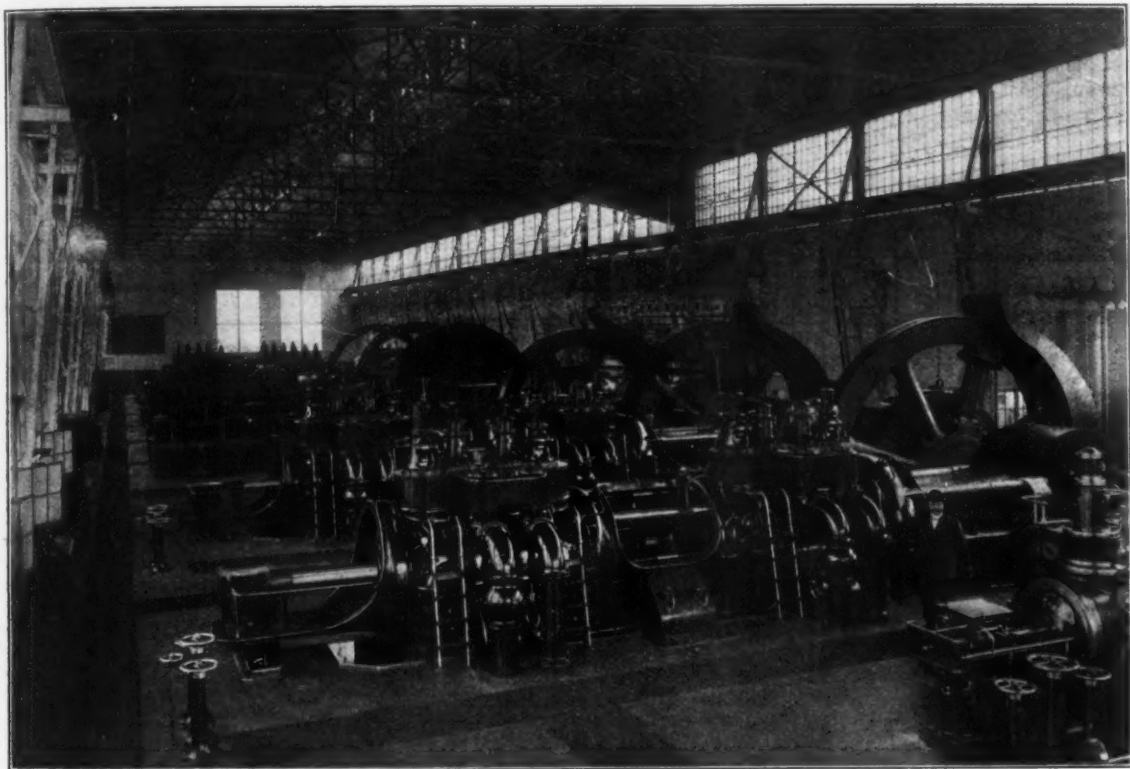


Fig. 8.—Electric Central Station.

mixers each of 500 tons capacity, which may be tilted either hydraulically or electrically. In the beginning of the week both mixers are in operation, since they can be charged full with the iron made on Sundays. The balance of the Sunday iron is cast into pigs in a pig bed located south of the mixer plant. For the remelting of the latter two cupolas are provided, which may deliver directly into the mixer. The small amount of Sunday iron which cannot be taken care of in the mixers is remelted in the blast furnace, so that the cupola plant at the present time is very little used. By employing it, however, it would be possible to increase considerably the capacity of the steel plant with the aid of purchased pig.

The mixer slag is tipped into a slag car through a special nozzle and is conveyed to the blast furnaces for reworking. The iron from the mixers is hauled by an electric locomotive to the basic steel plant, is weighed and is directly tipped into the converters. The four converters, each of 25 tons capacity, are located in a straight line in a building 24.5 m. wide which contains besides the converter platform a platform for charging scrap and limestone, these being connected by two elevators. One of the elevators is used for handling scrap and the other for ferromanganese and spiegeleisen, while the burnt lime is brought to the steel works by elevated road from the warehouse and is discharged into the converters through funnels. The heating of the ferromanganese is

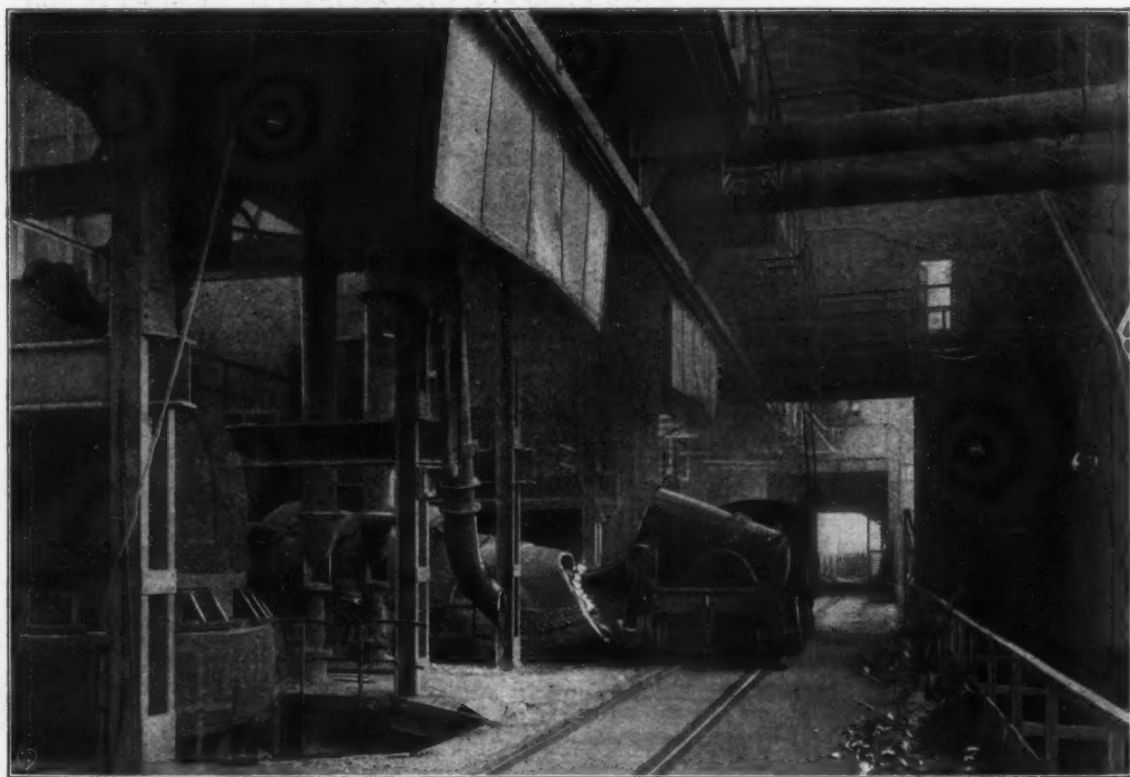


Fig. 9.—Charging a Converter.

done on the limestone platform in a reverberatory furnace.

For melting the spiegeleisen there are two cupolas. The arrangement is such that the spiegeleisen after the converter slag has been poured off is brought to the con-

of 20 and 16 m. span, respectively. In the main span are two 15-ton ingot traveling cranes for handling the molds, stripping and transporting the ingots from the long casting pit, while in the other span is a 12-ton electric crane for loading the ingots which are to be

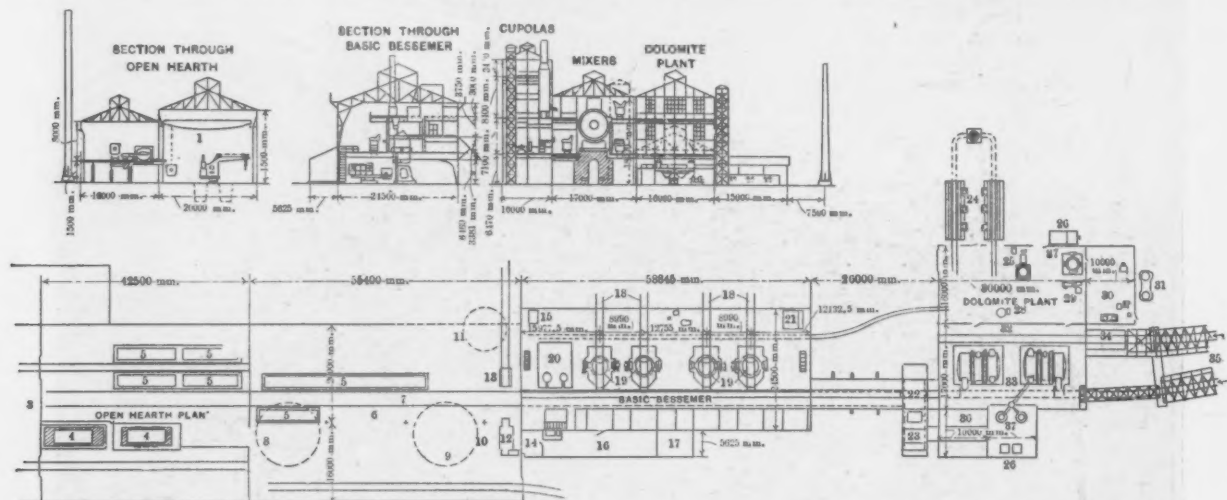


Fig. 10.—Steel Plant with Mixer and Dolomite Plant.—1, 50-Ton Traveling Crane; 2, 5-Ton Traveling Crane; 3, Extension of Open Hearth Plant; 4, 25-Ton Open Hearth Furnaces; 5, Casting Pits; 6, Cast House; 7, Casting Pit Track; 8, 8-Ton Crane; 9, Ladle Repair; 10, 12-Ton Crane; 11, 2-Ton Crane; 12, Stopper Drying Oven; 13, Slag Lifting Table; 14, Motor Room; 15, 25-Ton Elevator; 16, Repair Shop; 17, Pulpit; 18, Cinder Track; 19, 25-Ton Converter; 20, Spiegel Furnace; 21, 10-Ton Elevator; 22, Scale; 23, Pouring Platform; 24, Bottom Oven; 25, Bottom Stamping Machine; 26, Elevator; 27, Chill Mill; 28, Brick Press; 29, Mixing Machine; 30, Machinery Room; 31, Tar Boiler; 32, Mixer Plant; 33, 500-Ton Mixer; 34, Ladle Elevator; 35, Elevated Track from Blast Furnaces; 36, Ladle Car House; 37, Cupolas.



Fig. 11.—Pit Building with Ingot Charging and Drawing Cranes.

verters in small ladle cars and is tilted into them (Fig. 9). The spiegeleisen may also be charged in the ladle. The ladle is on a casting car operated both electrically and hydraulically, which takes the steel to the cast house, where it is cast into ingots of 4 to 5 tons weight. The cast house is 54.4 m. long and consists of two parts

shipped and which are cast in a smaller pit and handled by an 8-ton electric rotating crane. The casting pits are shown in Fig. 10.

In the dolomite plant the material is broken in a crusher to the required size and is burnt in two cupolas. The burnt dolomite is ground in two Chill mills. Pre-



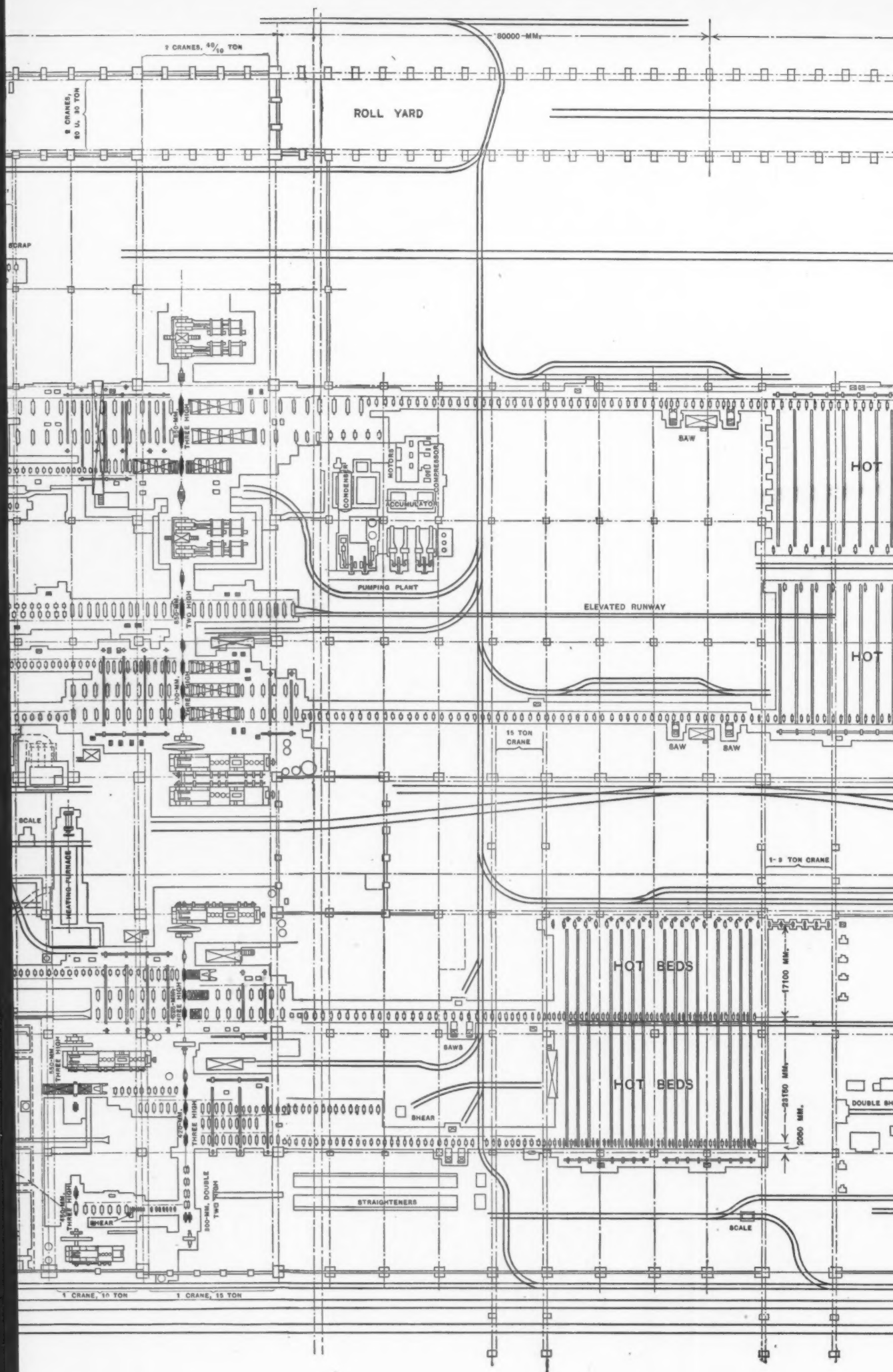




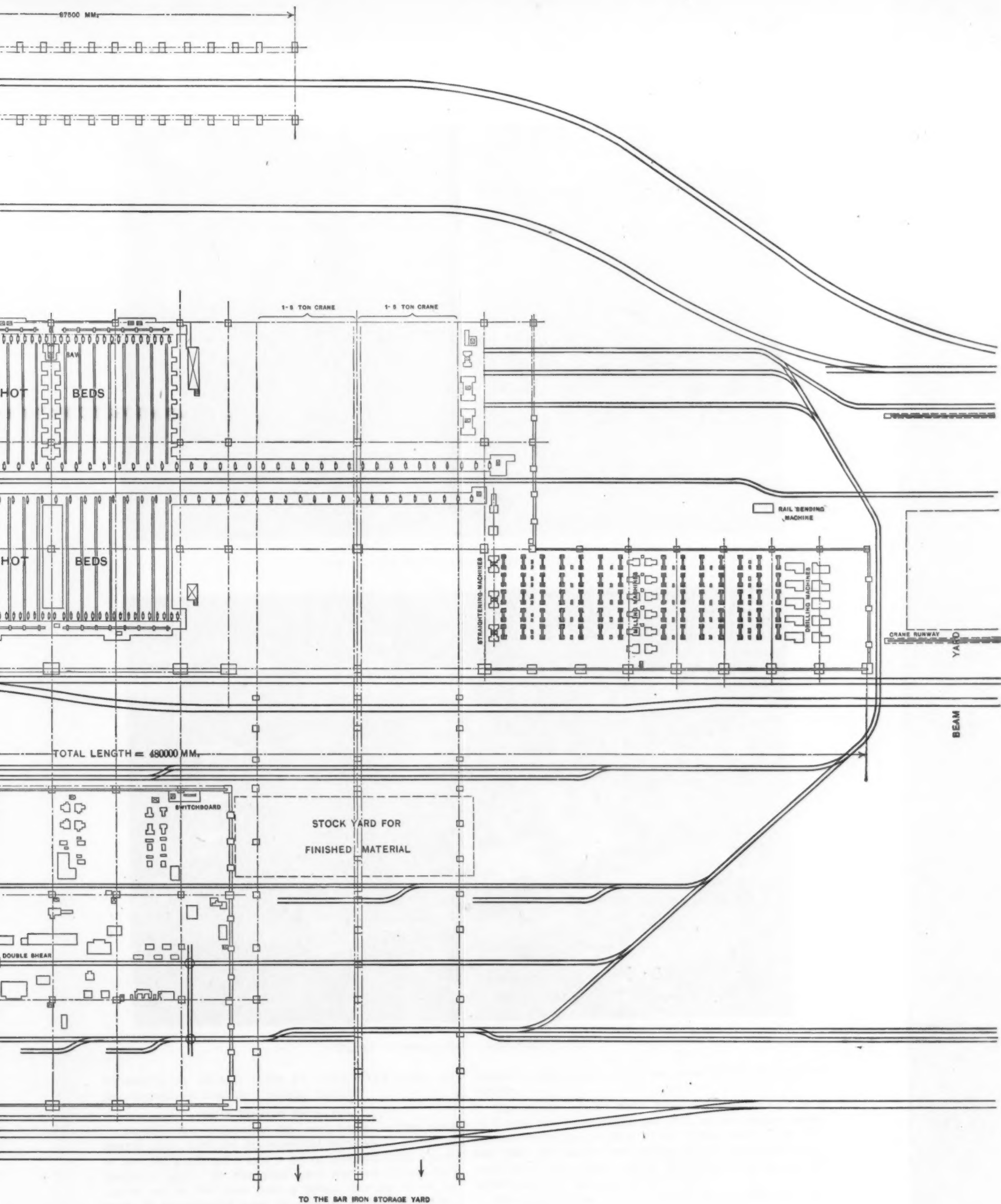


## GENERAL ARRANGEMENT OF





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pared tar is added and the mass put into a steam heated mixer. The converter bottoms are stamped up from the dolomite so prepared in a Versen machine. Converter brick are made in a 500-ton hydraulic press.

The ladle cinder is dropped into a car placed upon a hydraulically operated elevator and is conveyed to the blast furnaces, while the changing of the ladles is per-

It is the purpose after starting this new furnace gradually to abandon the old ones and add the space to the cast house, with the idea of increasing the basic Bessemer output. The furnaces may be charged with liquid metal or by a traveling crane with scrap. Scrap charging machines are contemplated for the extension of the open hearth plant. It is possible, furthermore, to charge the



Fig. 12.—850-Mm. Reversing Three-High Train.

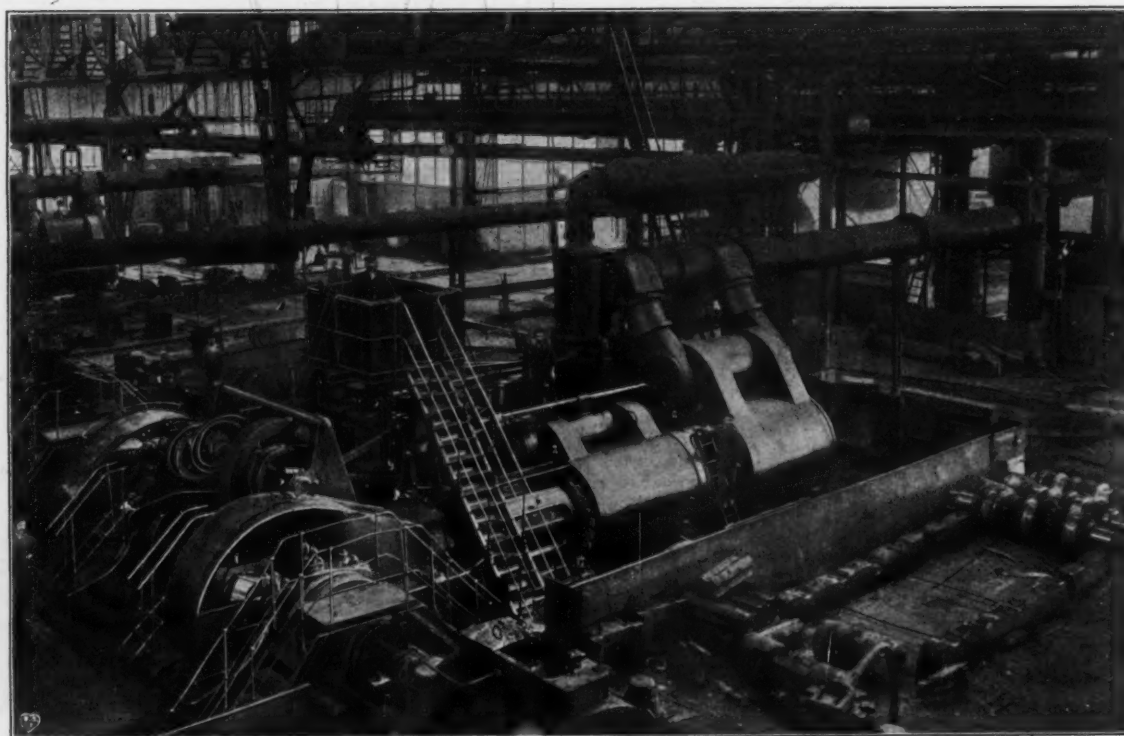


Fig. 13.—Reversing Engine of 850-Mm. Train.

formed by an electric 12-ton jib crane. The drying of the stoppers is done in a special furnace.

#### Open Hearth Furnaces.

Immediately adjoining the cast house is the open hearth plant, built for experimental purposes in 1900. It is now being extended and is being provided with a new producer plant. In the older part are two 25-ton furnaces and in the new part a 35-ton furnace is to be built, to be followed later by another of the same size.

furnaces with metal which has been blown in the converters.

The ingots, chiefly basic Bessemer steel, weighing 4 to 5 tons, are taken while hot by a narrow gauge steam locomotive to the pit shop of the rolling mills (Fig. 11) and there are put by two electric 7.5-ton traveling cranes into Gjers pits, there being 40 unheated pits and 32 heated pits for heating cooled ingots.

The ingot cranes lift the heated ingots from the pits

and place them upon the hydraulically operated tippers of the electrically driven rollers of two blooming mills. These are reversing mills of 1150 mm. diameter of rolls and 2800 mm. length of rolls and are driven by twin tandem reversing steam engines through 1 to 2.5 gearing, each having a maximum power of 7000 hp. The exhaust is used for heating the boiler feed water.

#### The Finishing Mills.

The 620 mm. ingots are rolled to 100 x 400 mm. blooms or to billets of about 110 mm. square, and after being

are placed side by side in a straight line in a building which is provided with a 40-ton and a 15-ton travelling crane for changing rolls. The 850 mm. three-high train is driven by a twin tandem reversing steam engine of 16,000 hp. (Fig. 13) provided with central condensation. The train, besides the three working stands on one side of the engine, has a two-high stand on the other side for rolling billets. The delivery rollers of the two-high set are provided with two saws and a shear for shearing the billets. In front of and behind the first stand of the

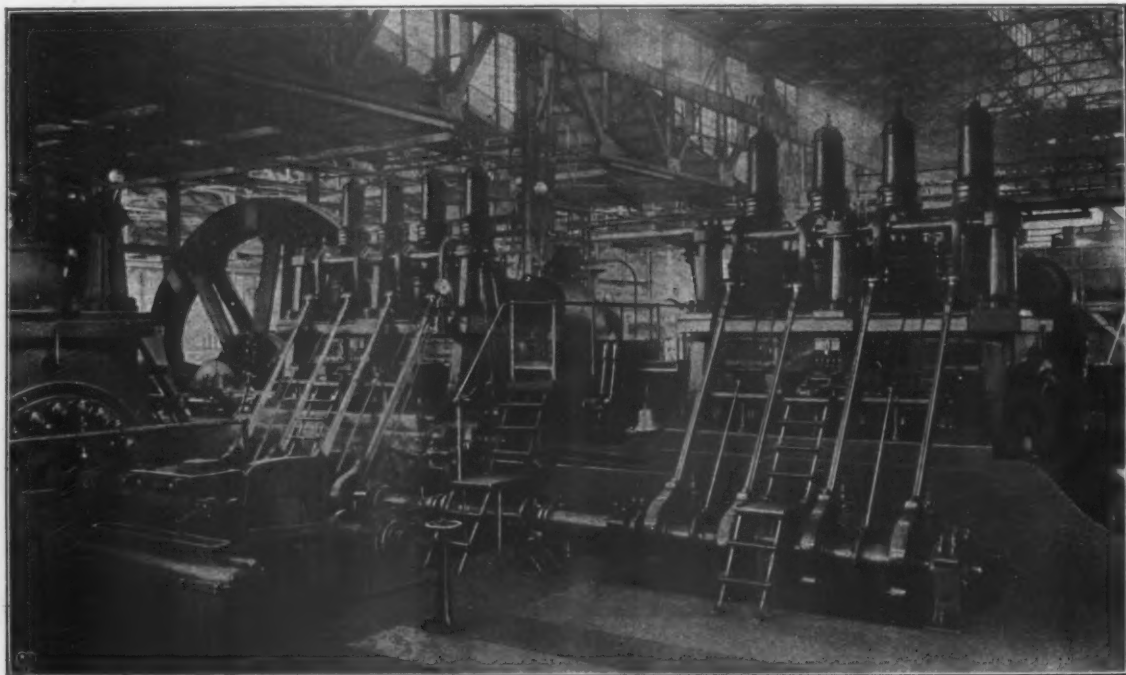


Fig. 14.—Rolling Mill Gas Engine for 700-Mm. Train.



Fig. 15.—525-Mm. Three-High Train.

sheared by steam hydraulic shears having a capacity up to 400 mm. and 260 mm. are delivered by rollers to the eastern section for shipment or they are rolled down to a range from 300 mm. to 150 mm. and forwarded by electrically driven rollers to the 850-mm. three-high train, Fig. 12. There they are rolled down to heavy rails, to beams up to section 50 of the German standard sections and channels up to No. 30 of the German standard sections. In order to roll larger sections the plan is to add later in connection with the second blooming mill a 950-mm. two-high reversing train. All of the finishing trains

850-mm. train are hydraulically operated tables. The second and third stands are provided with electrically operated rollers on the roller's side and hydraulically operated tables on the catcher's side. The handling across the mill is done by dragging. Two saws on the delivery rollers cut the stock and thence the product goes to the straighteners and to stock or to cars.

In series with the two-high stand of the 850 mm. train are a 700-mm. three-high train, a 525-mm. three-high, a 420-mm. meter three-high with 550 mm. breaking down train and a double 300-mm. reversing train with 450 mm.

preliminary train. A continuous mill is being built.

The 700-mm. train has one gear housing and three stands and is driven by a three cylinder, double acting, four cycle gas engine of 3700 hp. (Fig. 14). The bloomed material cut to length on a hydraulic shear is supplied by a 4-ton electric traveling crane and is rolled in the same heat into shapes, rails, angle bars or ties. All the three stands are supplied with electrically driven rollers on the roller's side and by hydraulic tables on the catcher's side.

The blooms for the 525 mm. three-high train (Fig. 15) and the other smaller trains are sheared by the smaller steam hydraulic shear and are conveyed by a 3-ton electric traveling crane to the heating furnaces before they are rolled. The 525 mm. three-high train and the 550 and 400 mm. preliminary trains are driven by double acting tandem four cycle gas engines of 1500 hp. All of the rolling mill gas engines were built by Krupp. The 420-mm. three-high train and the 300-mm. double two-high train are driven by the gas engines of the corresponding preliminary trains through rope drives. The products of the 525-mm., 420-mm. and 300-mm. trains,

165 three-room, 230 four-room, 30 five-room and 11 six-room cottages. Unmarried workmen are provided for in three sleeping houses, with a total of 530 beds, a large dining house serving them. At the present time there are about 4500 workmen and 400 officials.

#### Drawbacks on Cast Pipe and Copper Nickel Wire.—

The Treasury Department's regulations of February 12, 1903, establishing a rate for the allowance of drawback on cast iron water pipe manufactured in part from imported pig iron have been extended, so far as applicable, to cover the exportation of similar pipe and other cast iron castings manufactured by the Central Foundry Company, New York City, with foundries at Baltimore, Md., and Newark, N. J., with the use of imported pig iron. In liquidation, the quantity of imported pig iron which may be taken as the basis for the allowance of drawback shall not exceed the net weight of imported pig iron contained in the exported articles, as shown by an abstract of manufacturers' record to be filed with each drawback entry, plus 4.21 per cent. of such net weight to compensate

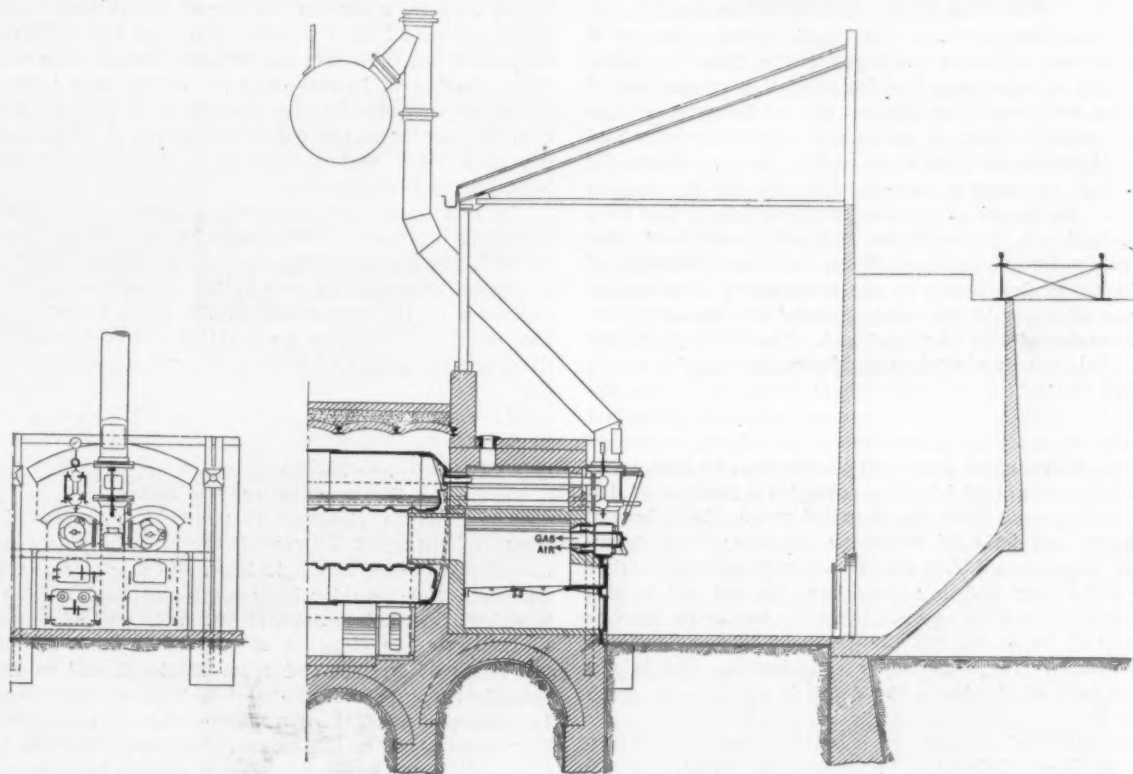


Fig. 16.—Firing Rolling Mill Rollers with Blast Furnace Gas.

which consist of light rails, ties, shapes and bars, are conveyed by electrically driven rollers to the saws and hot beds.

#### The Steam Plant.

The blast for the steel plant is furnished by a horizontal compound steam blowing engine capable of delivering 900 cu. m. per min. at 2 to 2½ atmospheres at 65 rev. per min. A second blowing engine of like capacity is in reserve. The steam plant consists of three groups of 10 boilers each, of 87 sq. m. heating surface, located at the blast furnaces; two groups of 10 boilers of 90 sq. m. heating surface at the coke plant and two groups of 12 boilers each at the rolling mill—a total of 74 boilers, with a heating surface of 6570 sq. m. The design of the boilers at the rolling mill is shown in Fig. 16. The blast furnace gas is introduced through tuyeres surrounded by an annular space through which the necessary air enters. The quantities of gas and air may be readily regulated.

#### General.

The works are supplied with an elaborate pumping plant, with a foundry, repair shop and testing and chemical laboratories. The workmen have a volunteer fire department. The Krupp Company has provided at the Rheinhausen plant a workmen's village which contains

for loss incurred in manufacture. On the exportation of copper nickel wire manufactured by the Driver-Harris Wire Company, Harrison, N. J., wholly with the use of imported copper nickel alloy bars, the quantity of copper nickel alloy which may be taken as the basis for the allowance of drawback shall be the net weight of the copper nickel alloy wire exported.

The Pittsburgh Automatic Vise & Tool Company, Pittsburgh, Pa., has been awarded the contract for the complete bench equipment for vises for the new Schoen Steel Wheel Company's plant at Newlay, Yorkshire, England. This order was placed after a very severe and thorough test made by the Schoen Steel Wheel Company at its plant at McKees Rocks, Pa., where the Pittsburgh high speed vise proved to the English management its right to the contract. The company reports that it is otherwise enjoying a very heavy business in the sale of vises to English users.

The Vanadium Alloys Company, 25 Broad street, New York, has printed in pamphlet form for distribution Dr. Richard Moldenke's report of his investigations of the use of vanadium in cast iron.



## The New Iron Mines of French Lorraine

Great interest has been taken by iron and steel companies in France, Belgium and Germany in the iron ore deposits in Lorraine, on which development work has been in progress in the past three years. Discoveries of rich mines have been made in the districts near the Franco-German frontier included between Longwy and Conflans-Jarny. In 1906 the output from the French portion of the new district reached 3,100,000 tons, and it is estimated that over 4,000,000 tons was mined in 1907. The center of the district is the town of Briey. In the acquisition of iron ore property in this district there has been sharp competition between French and German steel companies, and strong Belgian interests have also been represented on the ground in exploratory work. A correspondent of the London *Times* gives interesting particulars of the developments thus far, which indicate that the Lorraine deposits are yet to become an important factor in iron manufacture on the Continent. Extracts from this account are given below:

### The Ores Partly Self-Fluxing.

The starting point of this rapid advancement of a region almost unknown seven years ago, from the industrial point of view, was the desire of the ironmasters of Lorraine, who work the silicious ores of Longwy and the country round Nancy, to discover a supply of richer and more calcareous ores, so as to enable them to obtain for their blast furnaces a more fusible and readily worked product. By means of previous explorations it had been ascertained, as far back as 1881, that excellent ores existed in the vicinity of Briey, but the difficulty of raising them, due chiefly to the presence of considerable volumes of water in the strata, caused the idea of working these deposits to be abandoned. About the year 1900 fresh trials were undertaken by Messrs. de Wendel, which resulted in proving the exceptional richness of this district. The ores of Briey, like those generally prevalent in Lorraine, are rich in phosphorus, and they contain 40 per cent. of iron, and from 8 to 16 per cent. of lime. The ferruginous strata of Lorraine comprise a number of different beds, among them the so-called green, black, brown, gray and red beds of ironstone, together with ferruginous limestones. The deposit chiefly worked is that termed the gray bed, but sometimes the red bed is also extracted. The thickness of the gray ore often reaches from 20 ft. to 26 ft., but the depth of this ore beneath the surface is frequently very considerable, and in the eastern part of the basin the depth is at times as much as 820 ft.

The principal concessions actually being worked are those at Joeuf, belonging to Messrs. de Wendel, which are already of ancient date, and those at Homécourt, the property of the Marine Furnaces & Steel Works Company, which latter raised during 1906 1,029,267 tons of ores. The depth of these workings is over 300 ft. The Furnaces & Steel Works Company at Pont-à-Mousson extracted 912,210 tons from two pits sunk by them at Auboué by means of the congelation process, and the Moutiers Company obtained ores in that vicinity to the extent of 483,000 tons. Throughout the entire southern portion of the district, which is now being vigorously opened up, great activity prevails. A rich concession covering some 2000 acres in the neighborhood of Conflans is about to be worked, and Messrs. Schneider of Le Creusot are proposing to commence operations on their concession near Jarny. To the north of Briey, in the so-called Landres region, exploratory work is being pushed with feverish speed. Ten new mines are either at work or in course of being opened out, belonging to the Pont-à-Mousson Iron Works, the Longwy Steel Works, the North & East Iron Company, to Messrs. de Wendel and other firms. The area of the concessions already secured in the Briey District is upward of 74,000 acres.

### French and German Interests Conflict.

The sudden growth of an industrial center of such dimensions in immediate proximity to the frontier has given rise to very serious problems, one of which is the question of coal supply. France is very deficient in coal, and the disparity between the native production and con-

sumption of coal is becoming more marked every year. It now reaches an annual total of 17,000,000 tons. French Lorraine obtains the greater part of its fuel at the present time from the German Saar basin, and, looking to the difficulties interposed by the German Government in the way of the export of its coal, it is evident that at any moment grave perils might thus be caused to the French metallurgical industry. Added to this, the German market for coal is under the direction of the Colliery Syndicate, whose director is also the head of the Metallurgical Syndicate, which is as much as to say that any day the French metallurgical works might be placed entirely at the mercy of the German metallurgists. It is quite impossible to employ usefully in France the redundant ores which the Briey basin is now pouring forth upon the iron market, and the bulk of these ores will certainly have to be exported.

From another aspect these rich deposits are greatly coveted by German manufacturers, who are themselves deficient in ores for the supply of their vast iron works, and, notwithstanding the operation of the French law, which only permits mineral concessions to be granted to native owners, a certain number of concessions have, by means of second-hand transactions, been retransferred to German firms. This fact has aroused considerable adverse public feeling in France; and in reality, seeing that the Briey ore deposits lie close to the Franco-German frontier, the matter is not devoid of gravity, and might one day give rise to serious friction in the political relations between the two countries.

In this connection it is not forgotten that when the boundary between the two countries was being delimited in 1871, the German Commission was accompanied by a geological expert, who was called upon to examine the character of the formations in the subsoil, and that by the treaty of Frankfurt the frontier line of Lorraine was fixed in such a way as to reserve for Germany the ferruginous basis as it was at that time known. The reason that the country around Briey remained French was due to the insufficiency of the trial sinkings which had been carried out at that period.

### Transportation and Labor.

The Eastern Railway Company has improved the means of transport between Briey and the points where the ores are being used. It has come to an arrangement with the Northern Railway Company to facilitate the working over the two lines, to lessen the cost of transport, to facilitate the dispatch of coal from the collieries in the north of France and from England, and to render possible the export of the ores to Belgium and England. In consequence of these measures various improvements have been made in the railroad between Dunkirk, Lille, Charleville and Longwy, and vast sidings have been constructed in the vicinity of Charleville.

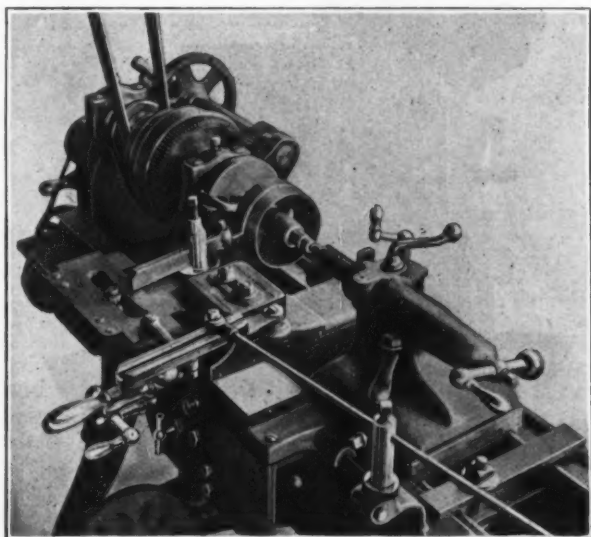
Another very important question is that of the supply of labor. The country around Briey has hitherto been a purely agricultural district, and very sparsely populated. It was, therefore, not possible to obtain the necessary work people on the spot, and the labor is recruited mainly by the employment of Italian immigrants. Workmen's towns are being created to accommodate these newcomers and a marvelous commercial activity is being manifested throughout the country. In short, the Province of Lorraine, which already constituted one of the most flourishing industrial centers of France, with its blast furnaces at Longwy, Villerupt and Nancy is now taking a fresh start of greatly increased importance and with a remarkable degree of rapidity. A veritable transformation is taking place at the present time which involves every part of the district.

The riches of these new Lorraine ore deposits and the more complete use of the abundant water power in our mountain regions are the two most important facts in the recent economic history of France.

The New England Cotton Manufacturers at a meeting in Boston February 24 unanimously decided that it is necessary to continue the curtailment of production for an indefinite period. For three months nearly all the mills in New England have been running on three-quarter time.

### The Mossberg Forming Attachment for Lathes.

The engine lathe attachment illustrated is designed for producing formed work, more particularly for crowning pulleys. It can be easily applied to a lathe and thereafter attached and detached very quickly as required. It is so constructed as to be secured to the carriage of an ordinary lathe in the same position and the same manner as the tool post. Only one former is required in crowning a pulley. The attachment was not designed to take the place of or in any way to compete with the special machines that automatically or semi-automatically produce pulleys in large quantities. But in many factories pulleys are still crowned by setting over the tailstock of an engine lathe, and in others the work is done by the use of formers employed in conjunction with taper attachments. The maker of the new attachment, the Mossberg Wrench Company, Central Falls, R. I., intends it to meet the needs of these shops and others where large numbers of pulleys are made, but not enough to warrant the purchase of more expensive special tools for the work. Its application to a lathe does not destroy the usefulness of the machine for other purposes, but merely extends its field by making it capable of rapidly pro-



A Forming Attachment for Lathes, as Applied to the Crowning of Pulleys, Made by the Mossberg Wrench Company, Central Falls, R. I.

ducing work of its kind of excellent quality. Besides a special usefulness in the manufacture of pulleys the attachment may be arranged for other formed work, and to the production of short tapers, such as friction clutch members. It is not claimed that the attachment is universal, but that it appreciably extends the scope of an engine lathe, and possesses the distinct advantage of not requiring permanent attachment to the machine; it can be interchangeably used by a number of lathes. Another advantage is that it requires no special arbors.

The attachment is secured to the tool post seat of the lathe carriage in the standard T slot there provided by two bolts. The tool post with its tool is carried at the left of the carriage on a slide, movable transversely. To this slide is secured a roll which enters a formed slot in a second slide having a longitudinal movement. If the latter slide remains stationary and the tool is fed longitudinally, as in turning the face of a pulley, the roll will follow the formed slot and impart to the tool an in and out movement producing a contour on the work corresponding to the form of the slot. The path of travel of the tool, which is the form it cuts, may be modified by moving the slotted slide concurrently with the travel of the tool. If this slide is moved in the same direction as the tool the crown cut will be flatter or of less curvature than if the slide were stationary and the roll simply followed the form, while if the slide is moved in the opposite direction to the travel of the tool the crown will be of greater curvature.

The variation in degree of curvature of the crown is obtained by the action of a lever pivoted to the fixture and connected with the slotted slide by a link and also by a tie rod to some stationary member, such as the bracket shown, secured to the ways of the lathe near the tailstock. It is preferable to secure the bracket to the tailstock permanently, where it can usually remain when the attachment is not in use, without interfering with other work. The lever has a T slot in which the adjacent end of the tie rod may be clamped at different distances from the pivot on the fixture. The point of connection of the tie rod becomes the fulcrum of the lever. When it is between the connection to the lathe carriage and the slotted slide, the tool and slide move in opposite directions when the feed is in action, thus causing the tool to cut an abrupt crown. When the tie rod is secured at a point directly over the connection to the link which extends to the slotted slide, there is no movement of the latter and the tool cuts a crown of the same curvature as the formed slot. When the tie rod is secured still further forward on the lever the slotted slide and the tool move in the same direction and a crown is cut flatter than the form of the slot.

An important feature of the attachment is its adjustable relation to the work as held on the arbor. With a fixed former, as in the usual taper attachment, each pulley must be located in exact relation to the tool, according to the position of the former, necessitating the use of shoulder or nut arbors. With this attachment the pulley may be located anywhere on the arbor, and when it is placed in the lathe the set screw holding the tie rod to the stationary bracket is loosened and the lathe carriage shifted until the point of the tool is midway of the pulley's face; then, by means of a handle on the outer end of the lever, the slotted slide is adjusted so that the roll is midway of the former slot and the tie rod set screw is tightened. Work is begun by shifting the carriage to start the tool at one edge of the pulley's face.

On some formed work, especially where the formed surface is at an abrupt angle with the turning axis, this attachment has the advantage that a less abrupt inclination in the form may be employed by causing the form to travel faster. As an example in the Mossberg Wrench Company's own work a form is used in which the tool point must cut a surface having a curve approximately a parabola. The lathe tool would not follow the abrupt portion of the curve if controlled by the usual former, but by making the former slot longer with the same lateral deflection the required curve can be readily produced by imparting to the slotted slide a rate of travel faster than that of the tool and in the same direction.

The McWane Pipe Works, Lynchburg, Va., and New York City, in its monthly *Pipe Parley* for February says: "The strong undertone we mentioned last month went still further 'under' about the first week in January in a big cut in prices both East and West." The company publishes each month a memorandum book for the month, which has been found to be quite a convenience by many customers. In connection with the February issue an illustrated circular was distributed giving information relative to the McWane meter box for sidewalk setting. This is a cast iron box for water meters, and is intended to be so arranged as to be always accessible to the official charged with reading, inspecting or repairing such meters. The company has just completed 5000 of these meter boxes for the city of Washington, D. C., which is said to be the largest contract of its kind ever awarded.

The Chicago Brass Company has purchased for its plant at Kenosha, Wis., two heavy Allis-Chalmers compound rolling mill engines of the horizontal vertical type, each having cylinders 28 in. and 56 in. by 48 in. stroke. These will operate non-condensing at 150 lb. pressure, and are designed to develop their maximum capacity at a speed of 120 rev. per min. Installation of the units is expected to be made in very quick time, as the purchaser's plant is equipped with trackage, traveling cranes and every modern appliance for handling heavy material of this kind.



### Customs Decisions.

#### The Duty on Ferro Alloys.

The Board of United States General Appraisers has completed the taking of testimony in a case of great interest to steel manufacturers. It concerns the proper duty on ferrochrome, ferrotungsten and ferrovanadium. The Government assessed these for duty at 20 per cent. ad valorem, as unwrought metals, but the importers claim that they are not unwrought metals and should be dutiable at \$4 a ton, because they assimilate to ferromanganese, which is provided for in the tariff at that rate. Ferromanganese is worth only about \$50 or \$60 a ton, but as the value of ferrovanadium runs up to \$4000 a ton and over, it will be seen that a duty of \$4 is relatively very small. The Government is determined to sustain its exaction of duty, although the case has been before the United States courts several times, and each time the Government has been defeated. On the other hand, the steel manufacturers are anxious to have the duty as low as possible upon these alloys, because they are so largely used in making special steels.

The cases recently tried before the General Appraisers were bitterly contested. Several importers were interested in them, but the active fight was made by the Midvale Steel Company, represented by Thomas Leaming and William M. Stewart, Jr., of Philadelphia. The Government was represented by Martin T. Baldwin, assistant solicitor of customs; Everit Brown, special counsel for the Treasury Department, and Charles Fuller, another special counsel. The active conduct of the trial was left in the hands of Mr. Stewart and Mr. Brown for the respective sides. The testimony presented was extensive and involved a close examination into the uses of these articles in the manufacture of steel. Briefs will be submitted to the Board of Appraisers by counsel on both sides, and it is expected that a decision will be rendered very shortly. It is also understood that, whichever way the decision may be, the case will be litigated through the Federal courts until finally the Supreme Court will undoubtedly be reached. The Government insists that these ferros are unwrought metals and therefore that they cannot be classified for duty by any vague resemblances to other articles, but that even if these articles are not unwrought metals, still they do not assimilate to ferromanganese sufficiently to warrant their classification at \$4 per ton.

#### Carding Machinery.

Classifying officers of customs have been notified that the Treasury Department has accepted the recent decision of the United States Circuit Court in the case of the Government against Evan Arthur Leigh of Boston, with reference to carding machines. The machines were imported with the necessary card clothing and forwarded in a knockdown condition, packed in cases. It was held by the Government representatives that the machines themselves should be assessed at 45 per cent., the rate applicable to manufactures of metal, while the card clothing was held dutiable at 45 cents per square foot. The importer, whose case has been regarded as a test, objected to the dual duty, and alleged that the machines are to be deemed entireties for the purpose of assessing duty. Under this interpretation of the tariff the machines pay duty merely at 45 per cent., as manufactures of metal. This classification the Treasury now concedes. Hereafter all importations of carding machines with the cloth on will be admitted at the single rate of duty.

#### An International Flying Machine Competition.

With the object of promoting aerial navigation Dr. Gans of Garmisch, near Munich, who is the chairman of the airship section of the Bavarian Automobile Club, has offered a prize of 10,000 marks (\$2380) to be awarded to a flying machine, between May 1 and October 1, 1908, during the Munich Exhibition. Competitors of any nationality are eligible for this prize. The prize will be awarded to the aeronaut who, starting from the ground, succeeds in flying or remaining suspended in the air above the space assigned to him for the purpose, for 10

min., and in landing within that area after the 10 min. have elapsed. Balloons or flying machines fitted with balloons are not eligible for competition. Intending competitors must enroll their names on the list in the office of the Sports Committee of the Exhibition, "Munich, 1908," and send a description of their flying machine, accompanied by a photograph or sketch, and pay an entrance fee. Further details may be had by applying to the office of the Sports Committee of the Exhibition, "Munich, 1908," 10 Neuhauserstrasse, Munich, Germany.

### The Waterbury-Farrel Screw Head Slotter.

The automatic slotting machine shown in the illustrations is designed for cutting the slots in the heads of screws. In designing this machine its builder, the Waterbury Farrel Foundry & Machine Company, Waterbury, Conn., had for its main object a large output of accurate

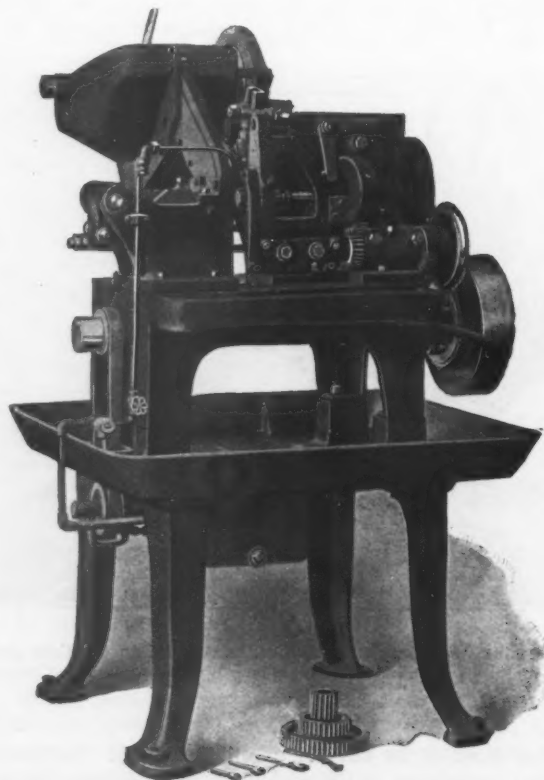


Fig. 1.—A New Automatic Screw Slotting Machine Built by the Waterbury-Farrel Foundry & Machine Company, Waterbury, Conn.

work at a rapid rate of production, and special attention was paid to rigidity. The rated capacity is for screws from 3-16 to  $\frac{3}{8}$  in. in diameter up to  $2\frac{1}{2}$  in. long, of which the number slotted per minute is 35 of the 3-16 in. size, 30 of the  $\frac{1}{4}$ -in. and 21 of the  $\frac{3}{8}$ -in. size. On shallow slots or on brass blanks these speeds may be exceeded. The machine constitutes an addition to the company's line of cold process bolt and nut machinery.

The action of the machine will be understood from the general view, Fig. 1, and the end and side elevations given in Fig. 2. The blanks are automatically taken from the hopper and presented in proper position in front of the saw by a toggle carrier slide. Here the blank is gripped securely between a die and the carrier slide during the slotting operation. The saw spindle is mounted on a swinging bracket which is strongly braced and guided to prevent chattering. When changing dies the bracket is disconnected and swung over to the front. The machine is provided with a clip shaver, to cut off the burr that forms on the head when the saw becomes dull, which consists of a cutting off tool that passes under the head of the blank just as the saw returns.



The machine is driven by a friction clutch pulley and extra sets of change gears are furnished to obtain a wide range in the number of blanks slotted per minute, thus enabling different sizes and kinds of screws to be accommodated. An oil pump furnishes a uniform flow of oil over the work, which thoroughly lubricates the saw,

**A Peat Coal Plant in New England.**—E. Curtis McKenney of Saugus, Mass., after several years of experimental work, has perfected a process for making from peat a solid, hard fuel, which is claimed to burn freely with light draft, producing intense heat and leaving a residue of light ash of about 7 per cent. This new fuel,

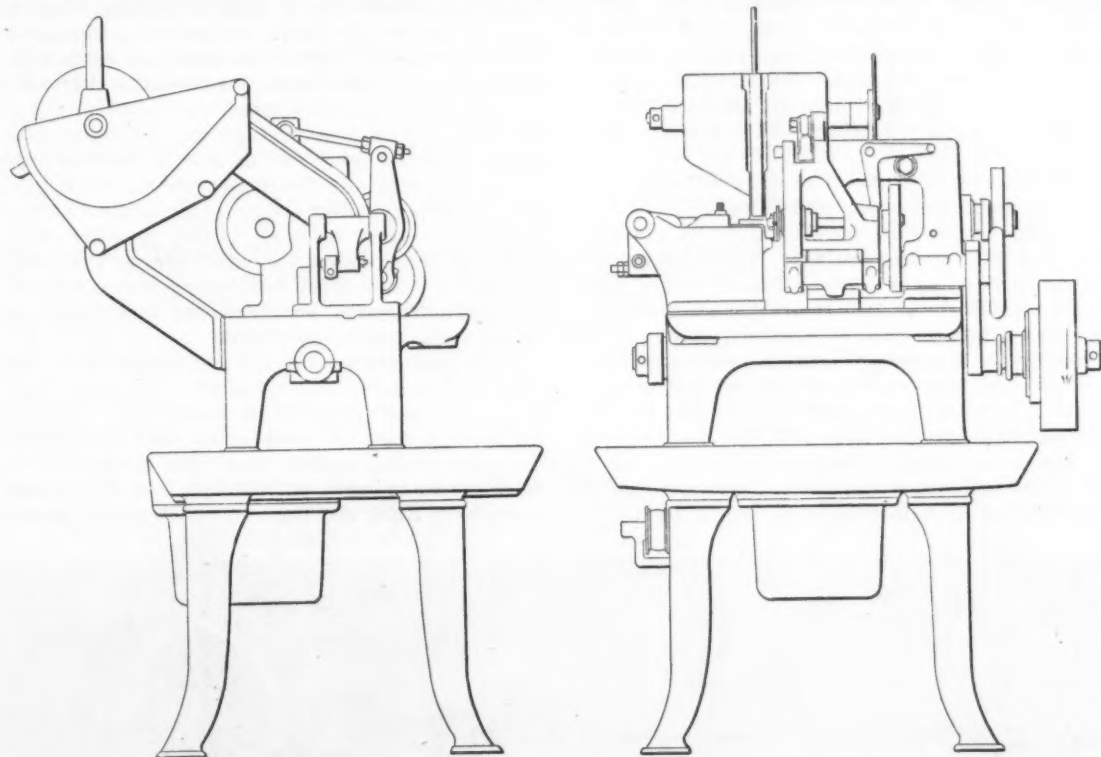


Fig. 2.—End and Side Elevations of the Waterbury-Farrel Automatic Screw Slotting Machine.

while a suitable guard removes chips, dirt and other foreign matter from the saw and keeps the dies and work clean. A pan beneath the machine catches the oil, which is returned through a strainer to a tank, to be used repeatedly.

These slotters may be mounted in groups, as shown in Fig. 3, in varying number, as desired, the common practice being to group six machines above a long table, which also forms the drip pan. In this case the group is driven

which is called peat coal, is said to leave no clinkers, cinders or soot, does not disintegrate, and emits very little smoke and no offensive gases. For some time an experimental plant has been operated, and plans have been completed for the erection of a plant capable of turning out from 50 to 75 tons of manufactured product per day, at Lynnfield, Mass., by the Franklin Peat Coal Company, 26 Hawley street, Boston, which has been organized to put the new fuel on the market. It is ex-

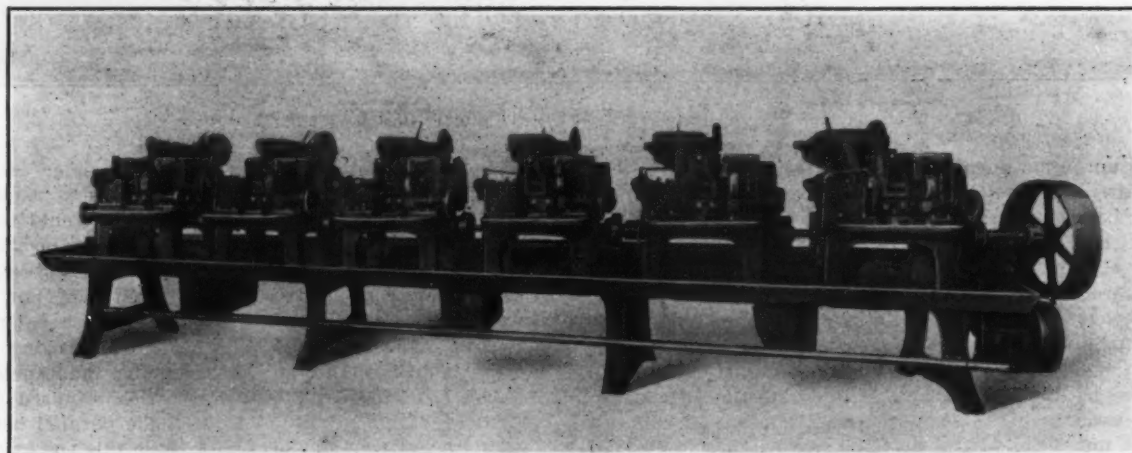


Fig. 3.—A Group of Six Screw Slotting Machines Mounted as a Unit with One Main Driving Pulley.

by a single 24-in. pulley, with  $5\frac{1}{2}$  in. face, running at 330 rev. per min. For the single machine a  $2\frac{7}{8}$  x 12 in. pulley is employed, running at the same speed as in the group arrangement, at which speed the cam shaft may be operated at 12, 21, 30 or 41 rev. per min. and the saw spindle at 180 or 720 rev. per min. The diameter of the saw is  $3\frac{3}{4}$  in. The single machine occupies a floor space of 41 x 44 in., is  $59\frac{1}{2}$  in. high over all and weighs 1240 lb. The group of six machines, arranged as a unit, occupies a space of 44 in. x 19 ft. 10 in. and weighs 7540 lb. All important wearing parts are made of the best materials and the machine is carefully fitted throughout.

pected that the new process will enable the company to use the extensive peat bogs of New England. E. Curtis McKenney is president; William E. Ludden, vice-president; Charles E. Robinson, secretary, and George N. March, treasurer.

The records of the ocean steamboat companies show that in the first 45 days of 1908 87,443 steerage passengers left the United States, while the number of immigrants was only 22,839. In the corresponding period of 1907 the number of immigrants was 56,832, or about two and a half times as many.

### The Quality of Lehigh River Water.

During the last year hydrologists of the United States Geological Survey have been making a study of the quality of the water of Lehigh River, Pennsylvania. The chief purpose of this work is to determine the nature and extent of the variations in the character of the water at different seasons of the year and its suitability for use by manufactories and for domestic purposes. At the same time the studies made show what minerals are dissolved from the soils of the Lehigh Valley and the quantity of each.

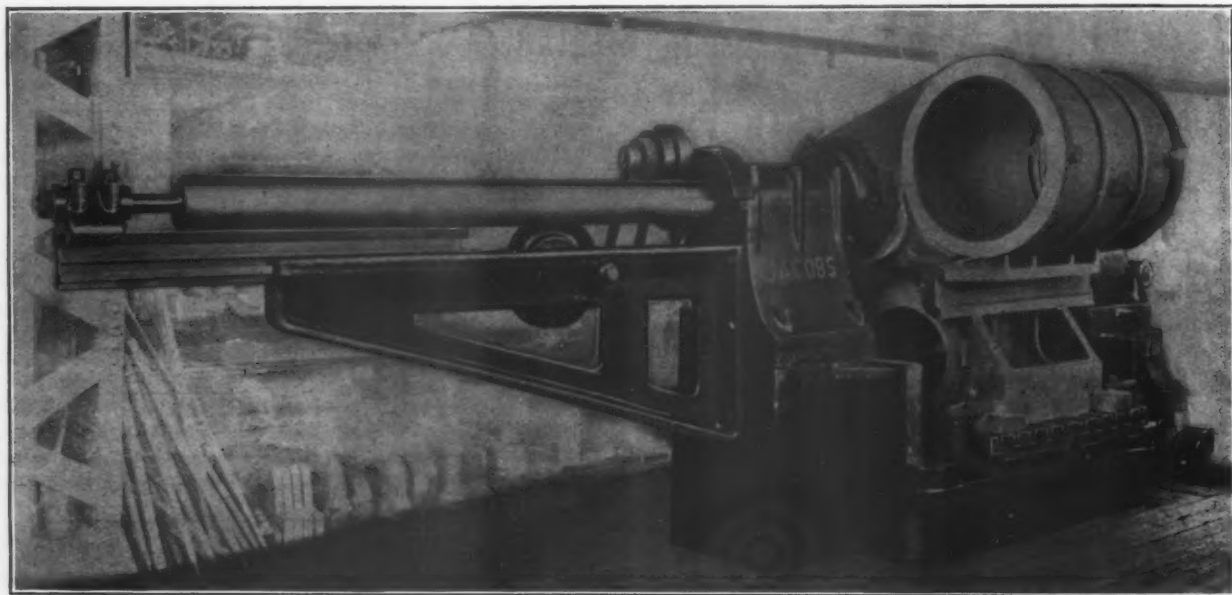
Samples of the river water have been collected from day to day at South Bethlehem and shipped to the Survey's laboratory at Washington, D. C., where chemists have submitted it to critical analysis. These studies are still unfinished, but many conclusions regarding the stream have been reached. It is shown, for example, that each year about 270,000 tons of dissolved minerals are carried past South Bethlehem. Of this quantity 10.2 per cent. is silica, the chief constituent of sand and of most rocks; more than 15 per cent. is calcium, washed into the stream as sulphate and carbonate of lime; nearly 6 per cent. is magnesium; nearly 8 per cent. is sodium, one of the constituents of common salt; only 1 per cent. is iron. The grand total of the minerals borne by the stream is

### Boring Multiple Cylinders.

BY E. J. MCKERNAN.\*

The usual locomotive cylinder boring machine has a horizontal spindle and a table permitting of no adjustment at all or only lateral adjustment. With these machines of the old design much time is consumed in properly setting the cylinder so that the boring bar will strike the true center, and high speeds and rapid cutting are not obtained. These disadvantages are magnified when cylinder castings having two or more cylindrical chambers are to be bored and faced, because the work has to be reset and the cylinders and valve chambers (where piston valves are used) must be exactly parallel with each other. If the cylinders are out of parallel the working of the engine throws great strain upon the guides with consequent detrimental effect on the machinery, causing undue wear, strain and trouble.

The machines of the old single bar type, designed when simple slide valve cylinders of not more than 18 or 20 in. diameter prevailed on locomotives, were adapted for use with the slow speed carbon steel tools, which were the most efficient at that time. The mechanism of these machines was simple, but the cast iron driving and feed gears were weak and drove the tools at an unprofitably



The Jacobs Rapid Universal Locomotive Cylinder Boring Machine.

made up of the metals named, carried in combination as sulphates, carbonates, chlorides and nitrates. The sulphate compounds are the chief constituents, amounting to about 116,000 tons a year; the carbonates are next in rank, aggregating about 86,000 tons a year.

These quantities seem great, but it must be remembered that the materials are washed into the stream from a large area. For each acre of ground that the river drains it bears away only 1 1/4 lb. of minerals daily.

The great quantity of sulphate compounds indicates a large amount of drainage from coal mines, and this has a very undesirable effect on the water for most industrial uses, making it harder and much more likely to form scale in boilers and less suitable for the textile industries and for general domestic purposes. Nevertheless it is still soft as compared with waters of the Middle West, and, after filtration to remove the excessive turbidity at flood stages of the river, it can be used successfully in nearly all industries that require large volumes of water.

Shipments of coal and coke originating on the lines of the Pennsylvania Railroad east of Pittsburgh and Erie, for the week ending February 15, aggregated 925,698 tons, an increase of 222,573 tons over the previous week. This was the first evidence of improvement in that direction since the beginning of the year.

slow speed. Later, when tool steels of greater cutting capacity and speed were introduced attempts to use them efficiently in boring machines of this class would result in stripping the gears or otherwise injuring the machine.

With advances in locomotive construction represented by engines having piston valves and often compound cylinders of the Vauclain type, or four-cylinder balanced compound type, the insufficiency of the old boring machines was still further emphasized. One manufacturer produced a three-spindle machine, which required only one setting of the work and insured the parallel boring of all cylinders and chambers, and while this possessed a number of advantages for certain classes of work, the single bar machine is still considered superior for general railroad shop use. The single bar has less gearing, is simpler, and is consequently easier to maintain. On account of the fewer parts the single bar machine requires less power, which can be obtained from a small motor. Where there are some advantages in boring three chambers at once it has been found in practice that chatter in one tool is transmitted to the other tools, causing a rough finish in all bores. It is apparent that this is obviated in the single bar machine.

Recently there have been built several heavy, rigid single bar machines, with powerful boring bars capable of driving the cutting tools to their full capacity. Accurate

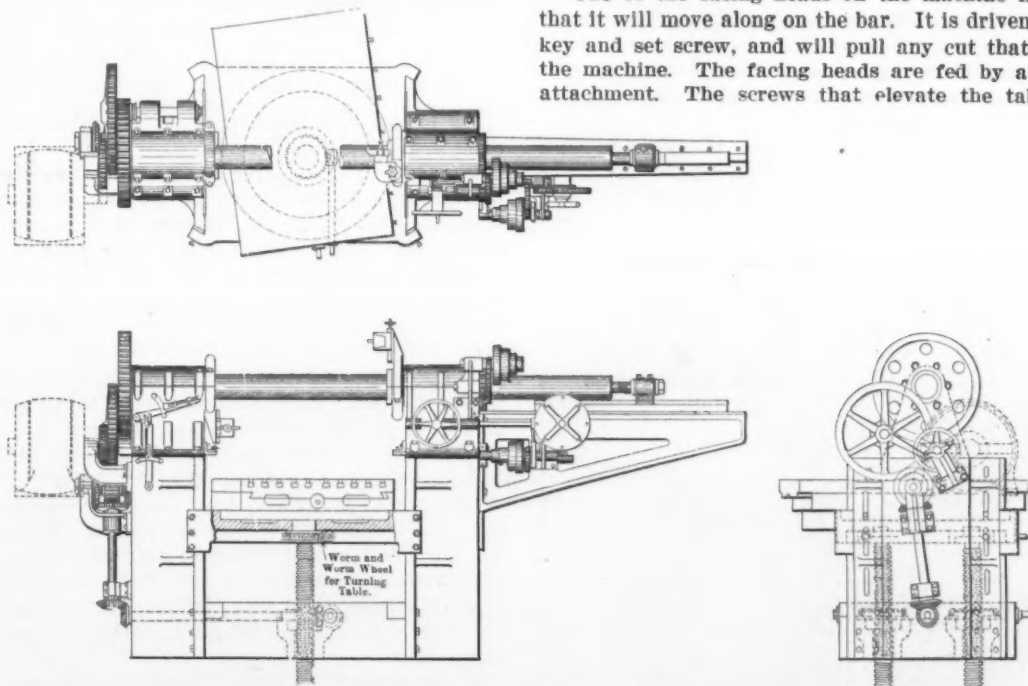
\* Tool expert, Atchafou, Topeka & Santa Fé Railway System.

setting of the work, which is especially desirable in connection with multiple cylinders, is accomplished by providing a table having both lateral and vertical motion, and these machines produce excellent work. But most of them thus far constructed are heavy ponderous affairs, expensive for the metal in them alone, and they do not have the needed wide range for all classes of locomotive cylinder boring.

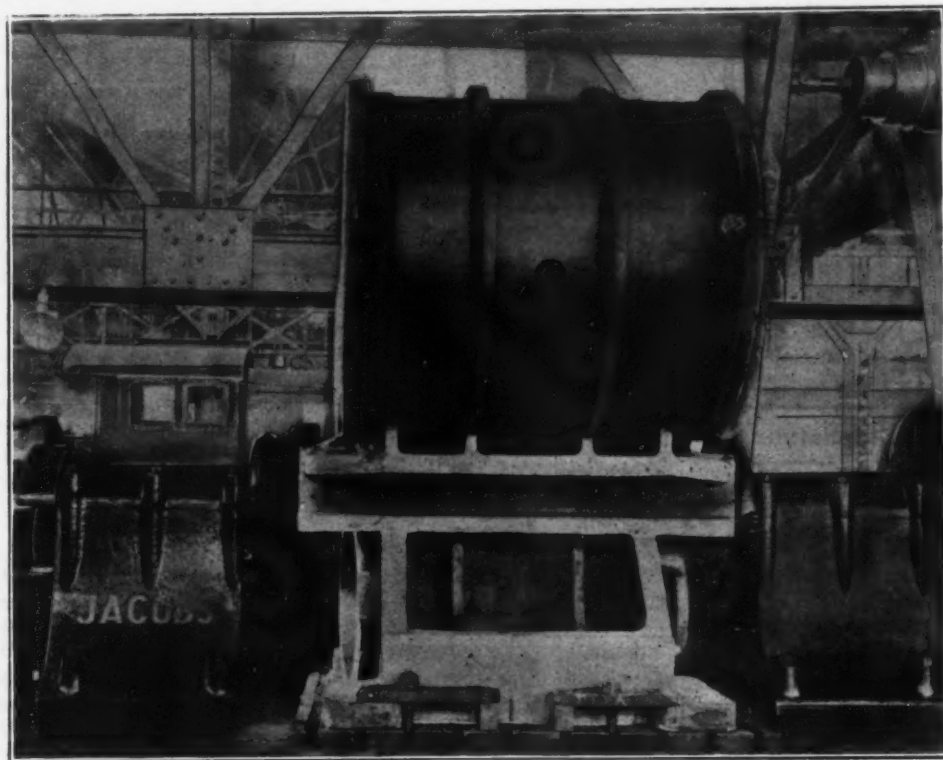
At the Topeka shops of the Santa Fé a cylinder boring machine, illustrated herewith, has been built, which

This machine is direct motor driven. The table is raised or lowered by power from the main motor through bevel gears and clutches, handled from the operator's side of the machine. All the mechanism is of modern design and is strong and durable, all gears being made from good gray iron, and all bushings of phosphor bronze. The boring bar is 7 in. in diameter, and is made from open hearth steel, and is fed through the cylinder by a spur gear and rack, which makes it rigid in operation and gives a smooth bore.

One of the facing heads on the machine is made so that it will move along on the bar. It is driven by a 1-in. key and set screw, and will pull any cut that is put on the machine. The facing heads are fed by a star feed attachment. The screws that elevate the table are of



Top and Side Views of the Table, Showing the Worm Gear Swiveling Arrangement for Boring Inclined Cylinders.



A Casting in Straight Position on the Table, with the High-Pressure Inclined Cylinder at the Bottom.

answers all the requirements for boring cylinders for all classes of compound engines. This machine is also adapted to bore cylinders on engines which have one cylinder or chamber at an angle to the others. All cylinders or chambers may be bored at one clamping of the cylinder by the mere raising or lowering of the table. This table has an elevating movement of 37 in. and a cross travel of 35 in. The table, which has the cross travel movement, has also a swiveling movement of 15 degrees.

soft steel, are  $5\frac{1}{2}$  in. in diameter and  $\frac{3}{4}$ -in. pitch. The screws are perpendicular to the boring bar, which contributes to rigidity. The total weight of the machine is about 15 tons, and it occupies a floor space of 223 sq. ft., having an extreme length of 21 ft. and an overall width of 14 ft.

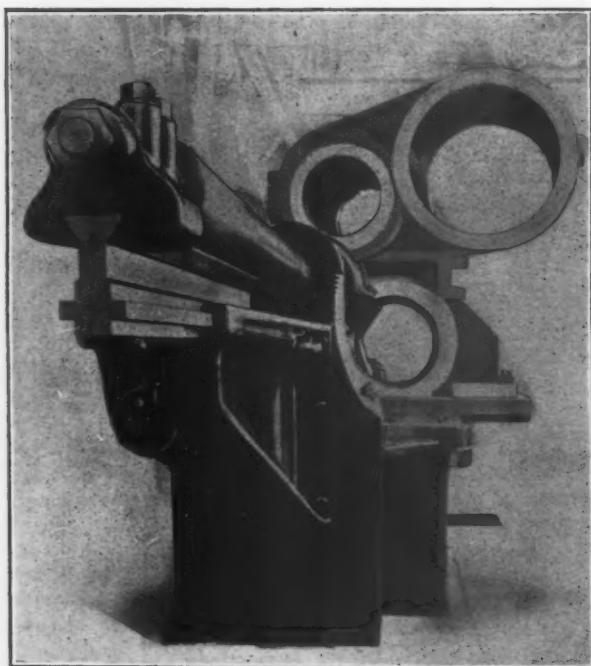
This machine is capable of boring a three-chamber compound cylinder in 15 hr., where it used to take 26 to 28 hr., or a simple cylinder in 3 hr., where it formerly



took 8 to 10 hr. In the latter case the saving in time represents over \$1500 per year in operator's wages alone, and the machine capacity is increased from 375 to 1000 cylinders per year. The increase in output of three-chamber compound cylinders is about 77 per cent.

If a machine which bores only one chamber of a locomotive cylinder casting at one time is to compete successfully with one which can bore three chambers simultaneously it must not only bore rapidly, but must be so constructed that only one setting will be required to bring the chambers into position to bore. This has been attained in the machine described, since after a cylinder has been lined up and clamped on the table any of the chambers may be brought exactly into position for boring, and it is impossible to bore two chambers out of parallel except by intention.

A machine of this design has been in operation some time at the Topeka shops of the Atchison, Topeka & Santa Fé Railway Company, proving satisfactory, both in its convenience in handling and in the lower produc-



The Casting Set with the Inclined Cylinder Parallel to the Boring Bar and the Low-Pressure Cylinder and Valve Chamber Out of Parallel.

tion cost. The Tool & Railway Specialty Mfg. Company, Atchison, Kan., has made arrangements to place machines of this type on the market. From its designer the tool is known as the Jacobs boring machine.

### The Fore River Shipbuilding Company's Report.

The comparative balance sheet of the Fore River Shipbuilding Company, Quincy, Mass., for the years ending December 31, 1907, and 1906, is as follows:

Assets.	1907.	1906.
Real estate, buildings, &c.....	\$2,300,361.19	\$2,101,984.00
Machinery, equipment, &c.....	1,270,642.41	1,159,239.95
Additions to plant.....	49,986.51	312,757.97
Patterns and drawings.....		110,714.87
Investments.....	24,762.37	30,960.00
	<u>\$3,645,752.48</u>	<u>\$3,715,656.79</u>
Less depreciation.....	120,000.00	120,000.00
Totals.....	<u>\$3,525,752.48</u>	<u>\$3,595,656.79</u>
Current assets:		
Reserve accounts receivable.....	\$143,956.97	\$167,054.53
Unearned insurance.....	17,822.51	15,326.38
Unearned taxes.....	8,222.24	1,181.40
Accrued interest.....	8,170.81	
Work in process.....	430,716.22	737,922.27
Material on hand.....	306,895.28	266,457.03
Accounts receivable.....	307,874.38	140,269.30
Cash on hand.....	281,262.20	404,935.37
	<u>\$1,504,920.61</u>	<u>\$1,733,146.28</u>
Grand totals.....	<u>\$5,030,673.09</u>	<u>\$5,328,803.07</u>

### Liabilities.

Preferred stock.....	\$2,400,000.00	\$2,400,000.00
Common stock.....	2,400,000.00	2,400,000.00
	<u>\$4,800,000.00</u>	<u>\$4,800,000.00</u>
Current liabilities:		
Accounts payable reserve.....	\$65,120.58	\$47,082.99
Unearned rentals.....	6,750.00	9,750.00
Advance payments on contract.....		52,766.78
Accounts payable.....	132,585.42	150,103.63
	<u>\$204,456.00</u>	<u>\$259,703.40</u>
Turbine development reserve.....		200,000.00
Surplus.....	26,217.09	69,099.67
	<u>\$26,217.09</u>	<u>\$269,099.67</u>
Grand totals.....	<u>\$5,030,673.09</u>	<u>\$5,328,803.07</u>

In his accompanying report to the stockholders, President Francis T. Bowles says:

"Additions to the plant and machinery were made during the year to the amount of \$50,000, including an extension of 112 ft. to the machine shop to provide much needed additional facilities in that department. All items of repairs and maintenance have been charged to expense. There are no notes payable and the present accounts payable are only current bills in process of accounting. The cash receipts for the year amounted to \$5,354,697.18.

"The following vessels were under construction December 31, 1907: Battleship North Dakota; scout cruisers Birmingham and Salem; seven submarine boats; one 11,000-ton steel collier, Melrose, since delivered; one steel freight steamer, Altamaha, ready for delivery; four steel light vessels, Nos. 90 to 93, inclusive; one steel harbor tug, since delivered. During the year the battleship Vermont, the freight and passenger steamer Creole, two steel freight steamers Ocmulgee and Ossabaw, two 11,000-ton steel colliers, Everett and Malden, four submarine boats and one steel harbor lighter have been completed and delivered.

"The average number of employees for the year was 3340. The force at present employed is 3045. There have been only trifling labor troubles during the year, but much difficulty in securing competent mechanics, resulting in a labor movement of over 8000 during the year.

"The company's turbine development has made substantial progress, but has necessitated the expenditure of the reserve for that purpose and brought about in addition the loss in surplus of \$43,000.

"Our first Curtis turbine steamer, the Creole, now running on the line with gratifying results, presented on account of the moderate speed of 15 to 16 knots and other circumstances the most difficult conditions to make a good showing for the turbine. The single mechanical difficulty encountered in its turbines has been overcome and was a minor one so far as the merits of the turbine are concerned. We had in this vessel the usual experience on all turbine development in trying several designs of screw propellers before a fairly satisfactory one was obtained."

The officers elected for the ensuing year are as follows: Francis T. Bowles, president; F. C. Dumaine, vice-president; H. G. Smith, manager; J. A. Sedgwick, treasurer; Samuel T. MacQuarrie, clerk.

The American Bridge Company, 42 Broadway, New York, has arranged to occupy its new offices in the Hudson Terminal, 30 Church street, April 20. The entire eleventh, twelfth and thirteenth floors will be occupied as the New York offices of the following subsidiaries of the United States Steel Corporation in addition to the general offices of the bridge company: Carnegie Steel Company, American Steel & Wire Company, American Sheet & Tin Plate Company, Lorain Steel Company, National Tube Company and Steel Products Export Company.

A systematic campaign in the interest of better treatment of railroads in the South has been started at Knoxville, Tenn. The Manufacturers' and Producers' Association has passed resolutions against adverse legislation toward railroads and other corporations so that business may be resumed and development continued.

### The Rockford Straightening Machine.

A machine for straightening shafts or similar work, which is a new product of the Rockford Drilling Machine Company, Rockford, Ill., successor to the B. F. Barnes Company, is shown in the accompanying engraving. The headstock spindle runs continuously and the center, which is inserted in the spindle in the usual way, carries a sliding collar. To the outer face of this collar is fitted a leather disk which contacts with the work under the influence of four coiled springs behind the collar, providing a friction drive.

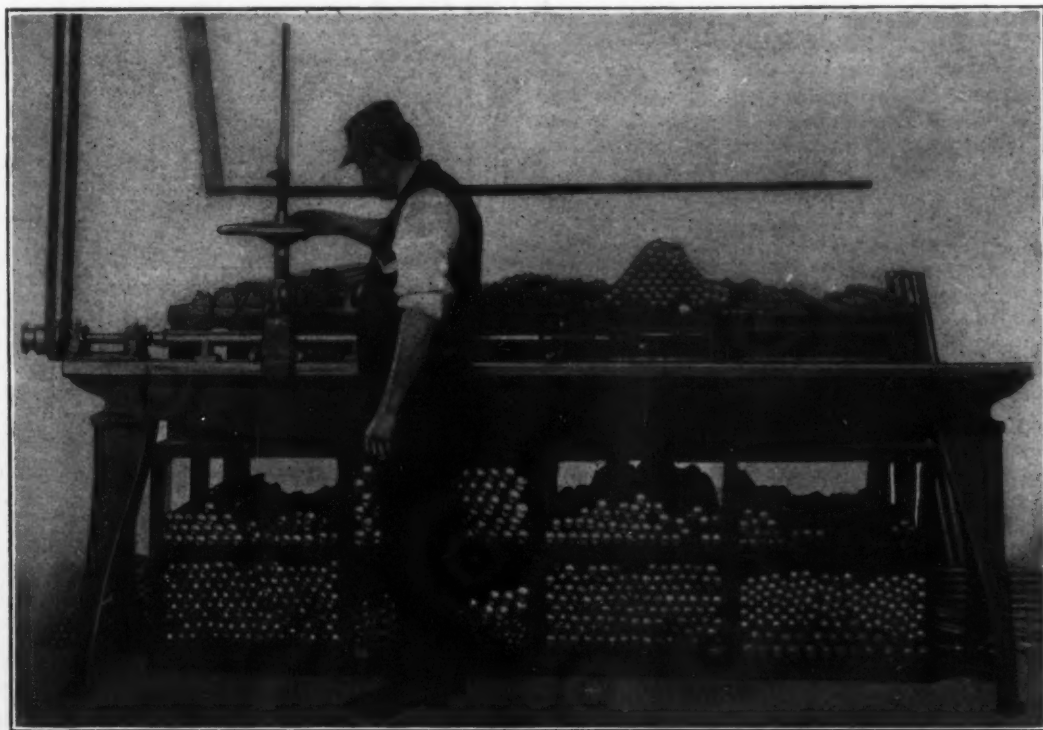
For each size of shaft or spindle to be straightened separate supporting blocks are furnished, having semi-cylindrical recesses exactly fitting the work when the center of the latter is about 1-16 to 3-32 in. below the center of the spindle. Moving the handle of the tailstock to extend the tail center brings both centers to place and lifts the work from the supporting blocks, pressing it against the leather frictional surface of the collar on the headstock center. The tailstock center is

tween centers of an engine lathe, but one man, who soon becomes skilful at the work, giving only a small part of his time to such jobs, does all the straightening at present.

### Portland Cement Production in 1907.

The Portland cement producers of the United States have replied so promptly to the statistical inquiries addressed to them by the United States Geological Survey that it is now possible to make a very close estimate of the Portland cement production for the calendar year 1907. Edwin C. Eckel, who is in charge of the statistical work on cement for the Survey, has accordingly prepared the following statement:

Returns have been received from 87 plants, representing over 95 per cent. of the Portland cement production of the United States. As the 10 plants which have not yet replied include only two large producers, it is possible to make a fairly accurate estimate of the total cement production of 1907. The returns so far received indicate that the total output of Portland cement in the



A Machine for Straightening Shafts and Spindles, Built by the Rockford Drilling Machine Company, Rockford, Ill.

then fastened by a clamp handle and the work revolved, enabling the operator to chalkmark the high places. Loosening the tailstock lever allows the tailstock center to be slid back permitting the work to fall on the blocks. The supporting blocks slide easily from place to place, are quickly adjustable and can be readily brought to the points desired between which the bend lies.

The carriage which supports the press screw, or straightening screw, runs on rolls, and is quickly and easily shifted on the bed to the point where the work is out of true. On the straightening screw is a revolving index plate which indicates the travel of the screw, and if in straightening a piece of work the first application of the screw is not sufficient, a guide is afforded for the second or more succeeding applications. This screw has a fine thread, so that the large hand wheel is capable of exerting all the pressure that is generally necessary to straighten a piece, but on heavier work the ratchet lever may be swung down, giving a more powerful leverage to straighten any piece within the capacity of the machine. The bed is very rigid and is able to support any work up to a reasonable size. The machine takes 8 ft. between centers.

This machine is used for all straightening work in the builder's shop; no straightening is ever done between lathe centers. Frequently it would take half a day to straighten a long shaft or spindle in the old way be-

United States in the calendar year 1907 was approximately 48,000,000 barrels. This should be compared with an output of 46,463,424 barrels in 1906, and of 35,246,812 barrels in 1905.

Though the production of 1907 shows an increase over that of 1906, it is slight as compared with past annual gains in the cement industry, indicating that the Portland cement production of the United States has now reached a stage in its development where it is directly and promptly affected by general business depression.

Three aeroplanes, instead of one, will be contracted for by the Signal Corps of the United States army. This decision has been reached by the Board of Ordnance and Fortification and approved by Secretary Taft as a result of the recent competition between inventors. The successful bidders, with their prices and time of delivery, are: Wright Brothers, Dayton, Ohio, \$25,000, delivery in 200 days; A. M. Herring, New York City, \$20,000, 180 days; J. F. Scott, Chicago, Ill., \$1000, 185 days. The board has only \$25 to apply on the aeroplanes, but it is expected that the remainder will be voted by Congress. The surprise bid was that of Mr. Scott, who, through patriotism for his country, agreed to build a satisfactory machine that will fly for the mere cost of material. Of 41 bids which were received these three were the only ones that followed the Signal Corps specifications.



## The Von Bauer Coke Oven System.

Arrangements are being made for the construction in the United States of a battery of the latest type of the Von Bauer retort coke ovens with recovery of by-products—the first of these ovens to be built in this country, though there is at Sydney, Nova Scotia, an installation of the earlier Von Bauer type. An essential feature of the system is a construction avoiding reversals in the currents of products of combustion and of preheated air, so that violent changes in temperature, affecting both the product and the oven construction, are prevented. The current of the products of combustion is continuously downward and simultaneously in all flues. Another departure from the more familiar forms of by-product ovens is in dispensing with elaborate regenerators.

The latest improvement upon the Von Bauer oven is embodied in the construction shown in Figs. 1 and 2. In

walls, easily accessible on both sides of the ovens, and their action observable through peepholes. Where it is necessary to widen the ovens toward the discharge end, to provide for the expansion of the coal, the extra heat necessary for the larger body of coal in the wider part of the oven can thus be supplied by proper control of the conduits supplying gas to the combustion chambers. Another improvement in this latest construction is in the preheating of the air for combustion, the ducts under the main combustion flue of the ovens being lengthened. The air for combustion is taken from the spaces under the ovens formed by the large foundation arches. These arches serve for the preliminary heating of the air supply, as well as for the cooling of the oven foundations. This arrangement confines the required openings in the sides of a battery of ovens to those necessary for charging and discharging a coking chamber by machinery and in the top to those for the admission of coal, in the case of hand charging, and for the necessary gas take-offs.

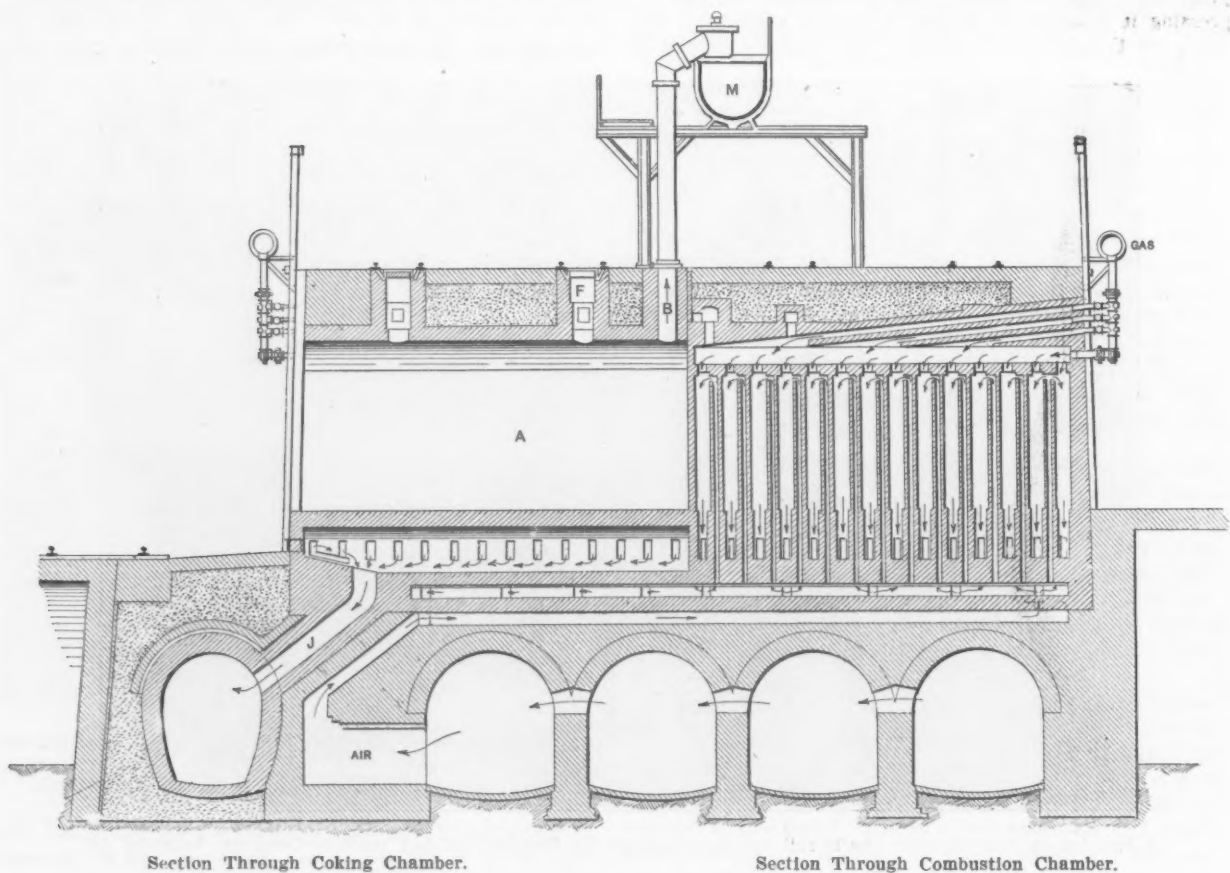


Fig. 1.—The Coke Oven System of Theodor von Bauer.

the earlier type the general operation was the same; coal being charged through the opening F into the coking chamber A, and the generated gases rising through the stand pipes B into the gas main M leading to the by-product plant for the extraction of tar, ammonia and benzole. The purified gases were returned through the end main shown. Longitudinal mixing and distributing flues for the gases were provided with special individual connections between these and the gas main. The gases passed downward from these mixing and distributing flues, entering the combustion chambers at the top and meeting the highly preheated air. The gases of combustion were then drawn down and collected in flues located under the coking chambers and discharged through the connecting flue J into the main flue, to be either further used in boiler furnaces or finally discharged through a chimney.

The more recent oven, as illustrated, has a better arrangement for supplying gas to the distributing flues in the upper part of the oven. It omits the internal adjusting tiles first used, and substitutes for them, through inclined passages, an independent, direct gas supply to different parts of the flue, controlled by valves, all located immediately opposite the upper parts of the partition

From the distributing ducts below, in which the air is treated to about 1000 deg. Fahr. It rises through special uptakes molded in the material forming the walls of the coking and combustion chambers, extracting heat from these walls and increasing its own temperature to about 1920 deg. Fahr. It is then introduced through separate openings into each individual combustion chamber. This method of preheating the air without generators or separate recuperators has proved successful, the air being heated in a simple and economical manner, while a greater yield of surplus gas results. The highly preheated air gives complete combustion, and the resulting high temperature in the combustion chamber is produced at and below the surface of the coal charge in the coking chamber. At the same time, as the gases of combustion have a downward course, the superheating of the upper parts of the coking chambers is prevented, as well as any decomposition of the gases in the coking chamber before their passage through the standpipe B into the collecting main. The design and construction of the coking chambers is such as to prevent the escape of any gases from them into the combustion chambers.

The average coking period is from 24 to 26 hr., which would represent a yearly capacity of about 180,000 tons



of blast furnace coke from a battery of 100 ovens. The yield of surplus gas is from 45 to 50 per cent., according to the kind of coal used. While the flue gases, because of their short travel, have a high temperature, it has been demonstrated that in the regular operation of the Von Bauer coke oven the transmission of heat from the walls of the coking chambers to the coal in the coking chamber is gradually reduced toward the end of the coking period, and that the layer of coke nearest the heated wall becomes hotter in proportion to the advance of the coking process toward the center of the charge of coal. In the last third of the coking period it has been found that the heating of the coking chambers can be dispensed with. The lifting and lowering of the doors is accomplished through a special hoisting apparatus by which the doors of one battery can be operated from one place, it being only necessary to attach a chain to any door and operate the controlling valve of the hoisting apparatus.

Among the advantages of these ovens the following are emphasized by the inventor: It is not necessary to

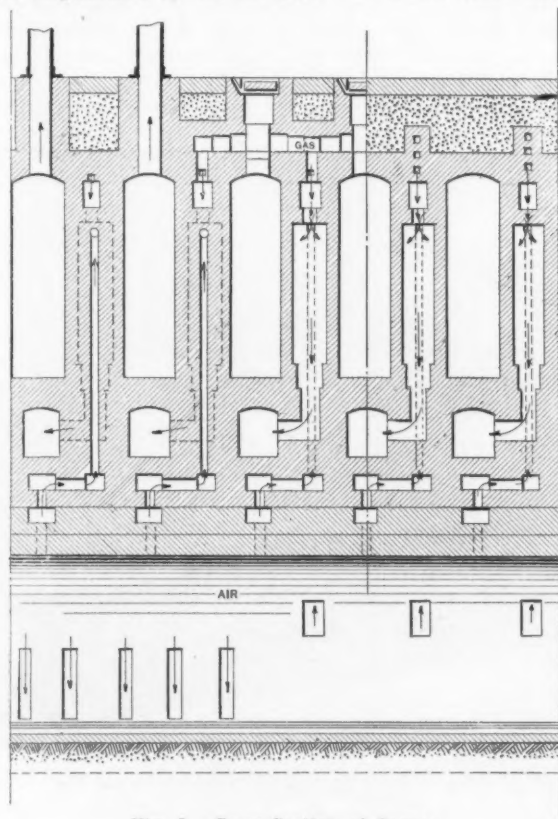


Fig. 2.—Cross Section of Ovens.

enter hot ducts to regulate tuyeres, all controlling valves of the fuel gas supply being on the outside of the ovens above the floor line. Deterioration in the lower part of the oven is avoided by the omission of gas distributing flues in this part, so that the temperature is reduced to a minimum. The partition walls are strong, and are tied in a transverse direction by partitions extending from top to bottom. The point of entrance of the preheated air into the combustion chambers is at such a level that the temperature of the upper part of the oven walls is not high enough for decomposition of the generated gases. The yield of surplus gas is increased by the proper heating of the oven walls in a downward direction simultaneously in all combustion flues. By the elimination of all internal dampers and flue walls in the newest construction of the oven the melting or destruction of interior adjusting tiles is avoided. Construction cost is kept down by the absence of complicated foundations and regenerators. Much surplus heat is available for boilers and other purposes, as there is no preheating of air required for combustion in large generators. The introduction of small vertical flues between the combustion flues in the walls of the oven chambers is a simple method of preheating the air required for combustion. The Von Bauer ovens can be converted from a direct fire to an indirect fire operating system and vice versa without any interruption in the operation of the ovens and without

affecting the quantity or quality of the product. In one instance the change from one system to the other for a battery of 60 ovens was accomplished in eight hours.

The Von Bauer patents are controlled in the United States and Canada by the Berlin Anhaltische Maschinenbau A. G.; Frederick J. Mayer, the well-known gas expert of Baltimore, and David B. Carse, 12 Broadway, New York. In Europe they are controlled by the Gesellschaft für Erbauung von Hüttenwerksanlagen, Duesseldorf, Germany, which is affiliated with the Berlin company named above, the latter company being prominent in the construction of gas works and by product plants. The Duesseldorf company is now building a steel works with a battery of Von Bauer ovens for the North German Lloyd interests. A late design of these ovens has been built at Ilseder and 60 additional ovens were recently ordered for this plant. An older type is in use at the Krupp Hanover collieries, and there is a similar installation at Sydney, Nova Scotia.

### The Schieren Fortieth Anniversary.

The celebration of the fortieth anniversary of the leather belting business of Chas. A. Schieren & Co. this year calls attention to the fact that this concern is one of the oldest in the business in this country. It was started by Chas. A. Schieren in 1868, shortly after the close of the civil war. The firm is marking this epoch in its history by becoming a corporation. Hereafter it will be the Chas. A. Schieren Company. The business will be owned and carried on by those who have been partners in the old firm, Chas. A. Schieren being president, F. A. M. Burrell vice-president, Chas. A. Schieren, Jr., treasurer, and H. V. Schieren secretary.

The growth of Mr. Schieren's business has been steady and rapid. At the outset he had a small shop at 90 Gold street, New York, with only two employees. Later the old Schieren Building, at the corner of Cliff and Ferry streets, diagonally opposite to the company's present building, was occupied and a few years after the concern acquired its own tannery at Bristol, Tenn. The continued expansion of its trade made a large addition to the tannery necessary, and gradually also branches of the house were established in all the important leather centers throughout the country. A European branch was opened at Hamburg, Germany, and agencies and representatives of the firm were located in all parts of the world.

A few years ago the old New York headquarters had become inadequate, and ground was acquired and the present Schieren Building erected. A year ago a ten-story addition to this structure was completed. The new Schieren Building is 10 stories in height and has nearly 5 acres of floor space. It is in outward appearance a substantial office building, but is in every way adapted to modern manufacturing purposes.

Chas. A. Schieren, Jr., in commenting recently on the growth of the business, said: "Advertising undoubtedly has been responsible in large measure for the continual expansion of our markets. We have been large users of space in the trade papers always, and have in addition thoroughly acquainted belting users everywhere with our products by the use of our own printed matter. Our salesmen all over the country have followed up the impression this created. The chain of argument has thus been complete, and it has resulted in an immense growth in our list of customers. The same methods are being followed in our foreign trade."

The Southwestern Machinery & Supply Company, 303 Grant Building, Los Angeles, Cal., recently organized for the purpose of representing manufacturers of machinery and supplies, is under the management of Charles L. Michod, who has been in the same business at St. Louis and Havana, Cuba, for the past five years. The president of the company is J. Wallace, 42 Broadway, New York, and Theodore G. Finley of Los Angeles, is vice-president and treasurer. Southern Nevada, Arizona and southern California will be the principal territory covered, but considerable Mexican trade is also anticipated.

### A Long Cleveland Open-Side Planer.

The longest machine tool casting ever made, it is believed, is the one which forms the bed of the planer herewith illustrated and recently completed by the Cleveland Planer Works, Cleveland, Ohio. The piece of work shown on the planer is another example of a difficult job successfully accomplished by the foundry. Both castings were made by the Johnson & Jennings Foundry Company, Cleveland, Ohio.

The bed was cast in one piece not only to test the capacity of the foundry but also to demonstrate the amount of vertical curvature necessary in the mold to secure a straight bed when cold with an iron of a certain analysis. So near were these calculations correct that when cold and supported in a neutral position the bed was straight within  $\frac{1}{4}$  in. vertically and  $\frac{1}{8}$  in. horizontally. The insignificant percentage of error is appreciated when it is known that the bed is 52 ft. long, 45 in. wide and 27 in. high. It was cast closed on the upper side with the exception of the opening for the bull gear and on the lower side the only openings were one opposite the column base and holes 6 ft. apart large enough to permit removing the cores. The walls are  $1\frac{1}{2}$  in. thick and the cross partitions  $1\frac{3}{4}$  in. thick and about 30 in.

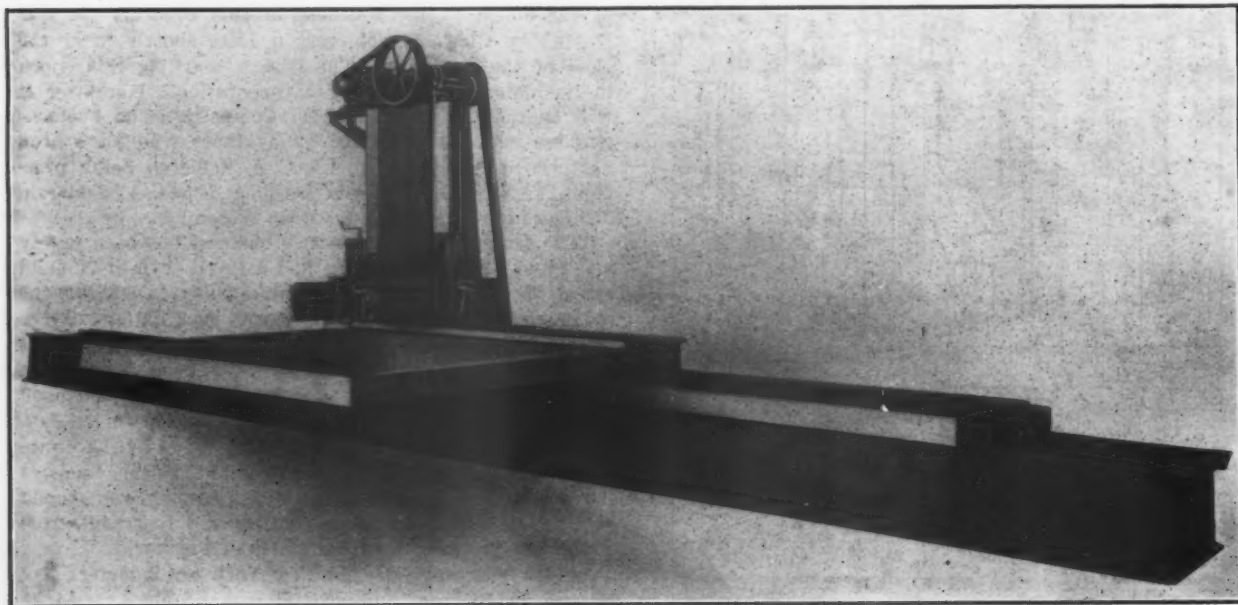
bolted is cast integral with the bed up to the level of the Vs.

As an indication of what this machine is capable of doing it is deserving of mention that the plate shown on the machine was planed in 26 hr. on the top and bottom. Four settings were necessary and the shape of the slide required both sides to be undercut.

### A Large Steam Piping Contract.

The Pittsburgh Valve, Foundry & Construction Company, Pittsburgh, has secured one of the largest complete piping contracts ever placed in the Pittsburgh District. It comprises the piping installation in the new open hearth steel plant being built by the Pittsburgh Steel Company at Monessen, Pa. It includes all the steam piping running from 24 in. down, the exhaust piping running from 72 in. down, and the main water piping for the plant, 30 in. and smaller. There are to be installed 15 500-hp. Sterling boilers, three large mill engines and three cross compound electric generator engines, together with necessary pumps for feed water and mill supply. The plant will have eight open hearth furnaces and 51 gas producers.

The pipe has been ordered for the most up to date



A 60-In. Cleveland Open-Side Planer with a Bed 52 Ft. Long, Handling a Plate 12 Ft. Square, Weighing 22,000 Lb.

apart. The casting weighs approximately 52,000 lb. and is practically without a blemish. It is sufficiently hard to afford a good wearing slide for the table. Proportionately the same accuracy was maintained in making beds varying from 15 to 30 ft. long.

The plate shown on the table in process of machining is a base for a floor boring mill, and was true within  $\frac{1}{4}$  in. in any direction and weighs approximately 22,000 lb. It is 12 ft. square and 9 in. deep, thoroughly ribbed and braced, and would have required a very large planer to machine it had not an open side planer been used. The planer, being a 60-in. machine, allowed the work to overhang the platen on the column side about 8 in. and the table being 54 in. wide the plate balanced within 2 tons.

The table on this planer is 31 ft. long and the Vs are 36 in. apart center to center. The rack has an 8-in. face and teeth of  $2\frac{1}{2}$  pitch. All gears and the rack are steel. The fitting of this platen was so well done that the reversing belt needed only to be shifted about  $\frac{1}{4}$  in. on the tight pulley to reverse the platen at full speed, which is about two and three-quarter times faster than the cutting speed, which is 25 ft. per minute. The belt speeds are 1600 and 4400 ft. per minute, respectively. The motor is a 20-hp. induction type. The column of this machine is 60 in. wide and 30 in. deep and at the lower side is fastened with 20  $1\frac{1}{4}$ -in. bolts and doweled with  $4\frac{3}{4}$  in. pins. The base to which the column is

construction, being specially designed by the Garrett-Cromwell Engineering Company, Cleveland. In this contract the Pittsburgh Valve, Foundry & Construction Company will install all its own make of valves, separators, exhaust relief valves and other specialties. It is pushing the work as fast as possible, as the open hearth steel plant is under contract to be ready for operation early in June.

**The Pittsburgh Coal Company's Earnings.**—Following is a statement of earnings of the Pittsburgh Coal Company for December, 1907, and for the whole year 1907, compared with the same periods in 1906:

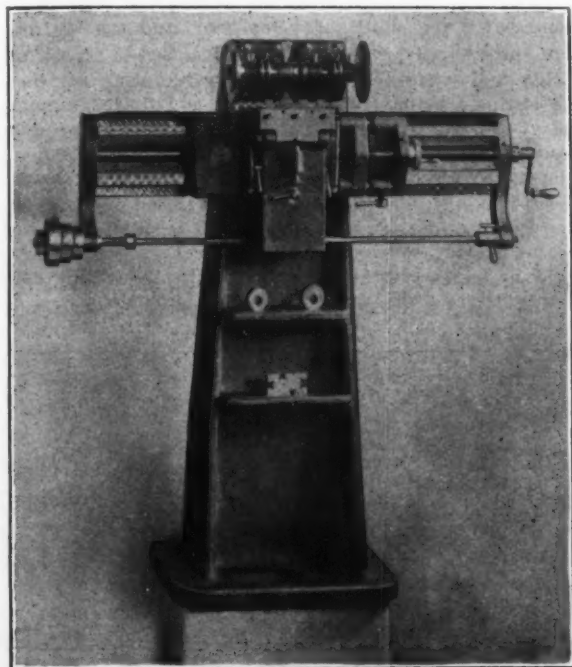
	December, 1907.	Decrease.
Gross earnings.....	\$282,099.98	\$233,314.67
Less reserve for depletion of coal lands	41,322.31	16,507.08
Less reserve for depreciation of plants and equipments.....	77,220.38	35,630.20
Less interest on first mortgage bonds..	88,250.00	7,713.14
Net earnings.....	\$75,307.29	\$173,464.25
	Year 1907.	Decrease.
Gross earnings.....	\$5,731,983.28	*\$434,859.95
Less reserve for depletion of coal lands	725,937.22	17,083.03
Less reserve for depreciation of plants and equipments.....	964,809.27	229,285.15
Less interest on first mortgage bonds.	1,082,643.88	84,596.75
Net earnings.....	\$2,958,592.91	*\$765,824.88

\* Increase.



### The New Waltham Gauge Grinder.

The machine shown is designed for grinding gauges where exactness is required. It was built originally for Wyckoff, Seamans & Benedict, but the maker, the Waltham Machine Works, Waltham, Mass., proposes to place it on the market. The gauges are first rough ground by the use of a corundum or other abrasive wheel carried on the right hand head. When the work has been reduced



The Gauge Grinding Machine Built by the Waltham Machine Works, Waltham, Mass.

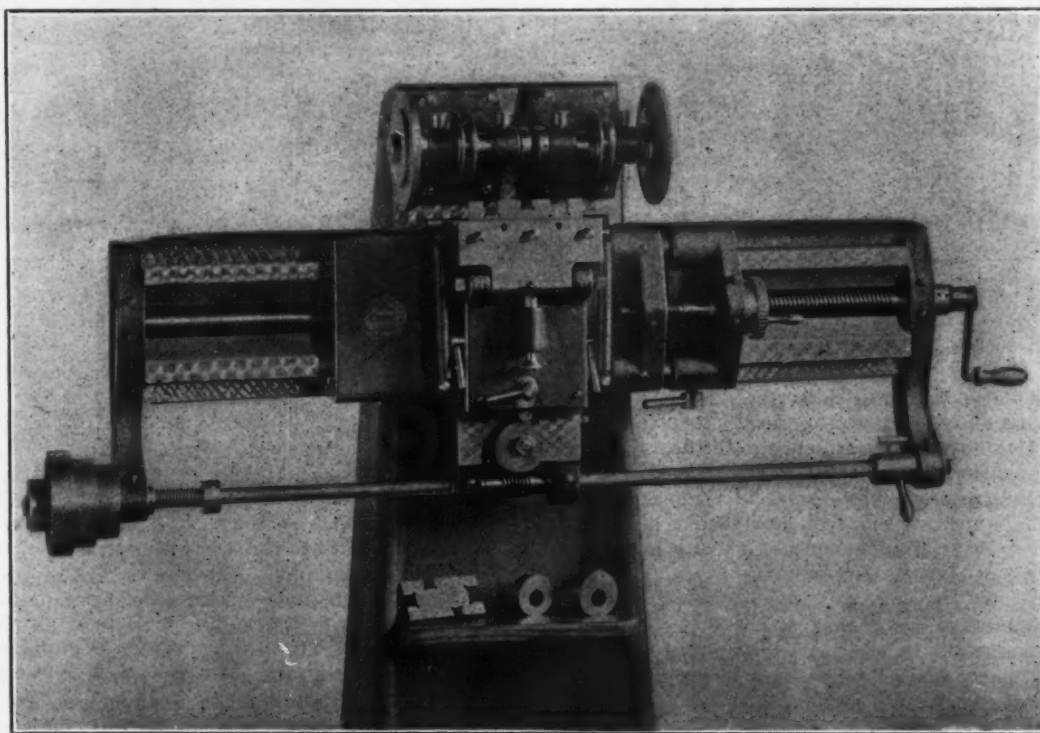
grinding laps at a greater speed at each end of the stroke. Fine adjustment for depth of cut is obtained by the graduated hand wheel at the right of the workslide.

When it is necessary to measure or remove the work the holder can be swung forward to an angle of about 45 degrees. A spring holds it in place against stops at the back when in position for grinding. An adjustment is provided for altering the position of the vertical slide so that gauges of different widths may be ground. A clutch controlled by the lever at the right of the lower driving shaft permits the stopping of the work without stopping the countershaft. The spindles, bearings and other working parts are of hardened steel. Several cams with different degrees of throw are furnished.

### Iron Ore Production in 1907.

The statistical work of the United States Geological Survey on the iron ore production for 1907 is sufficiently advanced to justify a preliminary estimate on the total amount of iron ore produced in the United States during the last year. Returns have so far been received from producers known to represent about half the output of the country, and these returns indicate that the total production for the year will fall between 52,000,000 and 54,000,000 gross tons. The total production in 1905 was 42,526,163 tons; that of 1906 was 47,749,728 tons. A total production of 53,000,000 tons in 1907 would amount to an increase of about 11 per cent. over the production of 1906. This gain was very unevenly distributed among the several producing districts. The Lake Superior District seems to show an increase of about 15 per cent.; the Southern District shows an increase of only 4 per cent.; and the Northern or Northeastern District gains 8 per cent. The Western District figures are as yet very incomplete, but appear to show little or no gain over 1906.

As the estimates are based on incomplete returns they are subject to correction, but whatever the corrections may be, final returns will show that the production of



A Larger View of the Head of the Waltham Gauge Grinder.

to nearly the required size the work carrying slide is quickly moved by the crank at the right of the cross rail to a position for contact with the diamond charged lap carried on the left head. The drives of the two heads are by separate belts.

An important feature of the machine is the provision made to prevent "bell-mouthing" of the work. This is effected by a specially cut cam, which is of the usual heart shape, but with its pitch increased at the high and low points, by which means the work is carried by the

iron ore during 1907 was largely in excess of its consumption. The amount of ore held in stock at the close of the year at mines, ore docks and other receiving points is probably the largest in the history of the iron trade.

The Kilbourne & Jacobs Mfg. Company, Columbus, Ohio, has received a large order for steel road scrapers for shipment to Warsaw, Poland. In the past few weeks the company has received several other good foreign orders.



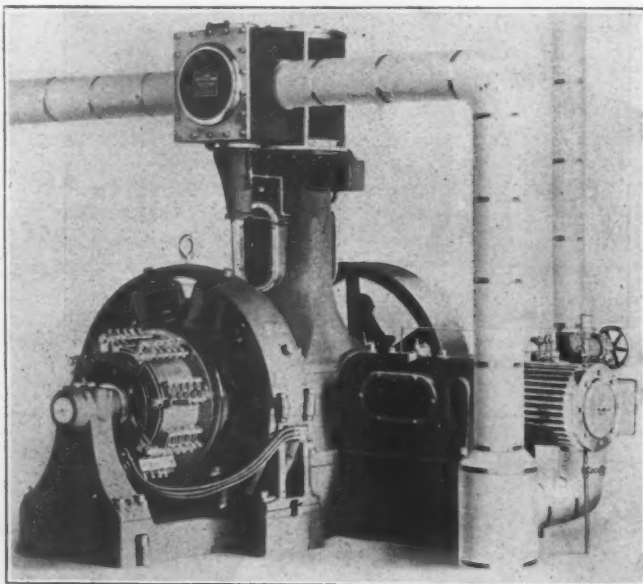
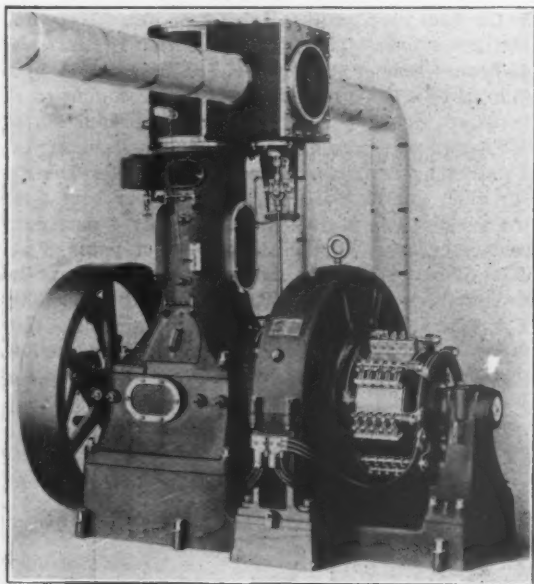
## The American-Ball Angle-Compound Steam Engine.

A new and interesting type of high speed engine has been designed by F. H. Ball and his son, F. C. Ball, of the American Engine Company, Bound Brook, N. J., which is known as the Angle-Compound engine. It is the contention of the designers that on a high speed engine a complicated valve gear, even if very efficient, has the serious disadvantages of increased cost of maintenance and greater liability of interrupted service, and that where high efficiency is desired a much better plan is to use a compound engine of simple design because it is vastly more economical of steam than any simple engine. The Duplex-Compound engine is in this line of development, and now this later engine is another step in the same direction.

The general plan of combining a horizontal engine and a vertical engine so that both shall work on the same crank pin is not new. There are examples of this in the large engines installed in the traction power houses of New York City, but the many desirable features of this

In the Angle-Compound engine herewith illustrated, the conditions for perfect balance are brought about by making the low pressure piston a very light, conically shaped, steel structure of about the same weight as the ordinary cast iron piston in the high pressure cylinder. The low pressure engine is made the vertical engine because it is thought desirable to have the larger piston supported vertically on its rod rather than to slide on the walls of a horizontal cylinder.

By referring to the two views of the engine, it will be seen that the high pressure valve is driven by the usual valve gear and shaft governor, and the low pressure valve by an eccentric which is inclosed in an oil tight casing and connected with the oil circulating system of the engine. From this eccentric a rod drives direct to the low pressure valve stem, which is guided by a crosshead carried in guides as shown, and the crosshead and guides are also included in the oil circulating system. The latter is similar to that commonly used on the American-Ball engines, except that the oil is pumped directly to the gravity storage tank on the low pressure frame which is kept constantly overflowing by the supply delivered to it from the pump. A double stuffing box on the



Two Views of the American-Ball Angle-Compound Steam Engine, a Combined Vertical and Horizontal High-Speed Automatic Engine Built by the American Engine Company, Bound Brook, N. J.

arrangement for high speed engines of the single valve gear type do not seem to have been appreciated.

In reciprocating engines the question of counterbalancing becomes more important the higher the speed, and it is a common mistake to think that such engines may be counterbalanced so that the inertia thrusts are neutralized. A counterweight attached to the heel of a crank merely transfers the unbalanced thrust from the plane of the reciprocating parts into a plane at right angles to it. Thus in a locomotive the counterweight in the driving wheel simply transfers the unbalanced thrust to a vertical plane. Recent experiments with a locomotive testing equipment have shown that at high speeds this vertical thrust becomes so great that when the counterweight passes over the shaft the wheels, with the weight of the engine on them, are actually lifted clear of the track. A horizontal engine, with the inertia thrust of its reciprocating parts transferred into a vertical plane will not rock on its foundation, and therefore seems to be balanced. It is the usual practice to counterbalance the largest part of the horizontal thrust in this way.

It is evident that by combining a horizontal and vertical engine on the same crank pin, the total horizontal thrust may be neutralized by counterbalancing, and when the counterweight is in a vertical plane it is opposed by the reciprocating parts of the vertical engine, so that at four points of the stroke a perfect balance is realized, and between these four points there is no position of the crank where there is any appreciable unbalanced condition.

valve stem and bulkheads and stuffing boxes on both piston rods prevent the water drip from mingling with the oil of the circulating system. The water drip from all these stuffing boxes is carried off by concealed piping.

A new departure has been made in the arrangement of the crosshead and guides, which are of the bored type. It will be noticed that the crosshead is a single piece without the usual adjusting shoes, while the guides are made adjustable. These guides are carried in bored seats, and a projection from the back of the guide fits between the supports, so as to resist end thrust. One of the guides is secured to the support by screws, and is only adjustable by means of shims, but the other has a pair of screws at each support to provide for delicate adjustments, and the guide is securely held against these adjusting screws by a bolt that locks the adjustment securely when set up. The crank pin is double the usual length, and the connecting rods are placed side by side on this double length pin.

The builder claims that this type of engine runs more smoothly and with much less strain and shock than any other form of high speed engine, because of its perfect balance and because it has four impulses on the crank at each revolution instead of two. One of these engines of 160 hp. 11-in. stroke, running about 300 rev. per min., direct connected to a generator, was recently installed in the company's own power plant. This engine has no special foundation, except the concrete floor of the building and no foundation bolts. A full length pencil stood on its end on the horizontal cylinder and on the vertical

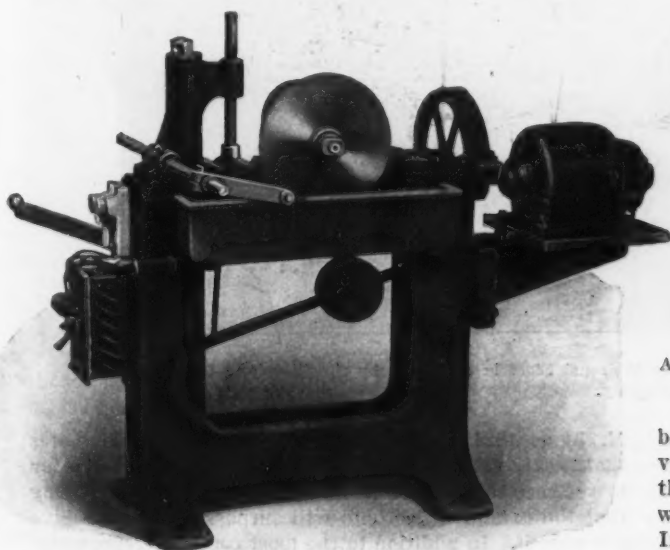
cylinder did not tip over even with a fluctuating load on the engine, showing a remarkable lack of vibration.

The floor space required by this engine is very small, since two engines of the same power are accommodated in substantially the space of one horizontal engine of half their combined power. The cost of the foundation is correspondingly smaller, and the perfect balancing of the engine simplifies the foundation problem; where concrete floors are used, no further foundation is ordinarily required.

For large powers these engines, combined in pairs with the generator or belt wheel between them make an exceedingly compact unit. In these combinations the engines are used as double compounds when run noncondensing, or where condensing water is available, as four-cylinder triple expansion engines. In the latter case one horizontal engine is the high pressure, the other horizontal the intermediate pressure and the two vertical engines combined are the low pressure engine, thus giving a large area of low pressure piston without using any pistons of very large diameter. Since the normal speed of an engine of this kind is high, the cost of the generator, and the amount of floor space are both greatly reduced. The engines are built singly or in combinations for capacities from 80 to 1000 hp.

#### A Small Burr Motor-Driven Cold Saw.

The engraving herewith shows an application of motor drive to the No. 1 cold saw manufactured by John T. Burr & Son, 433 Kent avenue, Brooklyn, N. Y., similar to the one of belt driven type described in *The Iron Age*, May 16, 1907. It is adapted to cutting off bar stock, pipe, &c., of all sizes up to 3½ in. in diameter. The machine uses a saw blade 10 in. in diameter, which is fed to the work by gravity; the feed is adjustable by altering the position of the weight on the lever shown. The driving



A Motor Driven No. 1 Cold Saw Built by John T. Burr & Son, Brooklyn, N. Y.

mechanism consists of a steel worm carried in a bracket on the carriage, a hobbled worm wheel and steel pinions.

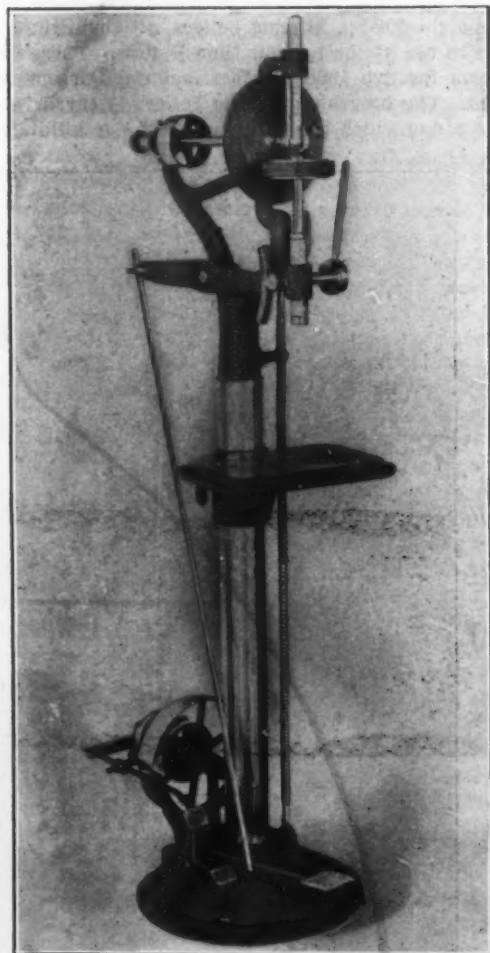
The machine is driven by a ½-hp. constant speed motor running at about 2000 rev. per min., connected to the splined worm shaft by a rawhide pinion and a cut iron spur gear. All of the gears are covered, and the starting box and switch are conveniently placed at the working end of the machine. Either a direct current or an alternating current motor can be furnished.

The Joseph Joseph Bros. Company, Cincinnati, dealer in scrap metal, has taken the large manufacturing building at Worcester, Mass., formerly occupied by the Wheelock Engine Company, and will establish a branch on the premises. The New York, New Haven & Hartford Railroad has placed spur tracks in the yard. The

Worcester establishment will be the assembling and shipping point for scrap metal purchased through New England. J. H. Crosby, Boston, has been made local manager.

#### A New Barnes Friction Disk Drill.

An addition to the line of friction disk drills manufactured by the W. F. & John Barnes Company, Rockford, Ill., shown in the engraving, is a combined hand and foot lever feeding machine. Among its more important features are that the speed of the drill spindle can



A Combined Foot and Hand Feed Friction Disk Drill Built by the W. F. & John Barnes Company, Rockford, Ill.

be increased or diminished instantly, or the motion reversed without stopping the machine or shifting belts, this being accomplished by sliding the driven friction wheel from, toward or past the center of the driving disk. In this way more or less driving power can be applied to the drill spindle, as the size of the drills or the nature of the work may demand. The feed lever is provided with a sensitive adjustment, which in connection with the control which the operator has over the speed and power makes it possible to use the smallest drills with the least danger of breaking them. By a conveniently located hand screw the platen or table can be moved rapidly on the column and clamped firmly at any desired height.

The machine will drill holes up to 5-16 in. in diameter to the center of a 10-in. circle. The greatest distance from the base of the drill to the spindle is 48 in., and the greatest height from the platen to the spindle is 36 in. The distance from the column to the spindle is 5 in., and the diameter of the column 3½ in. The spindle is ¾ in. in diameter, and has a vertical travel of 4 in. The table is 10 x 14 in. in area. The tight and loose pulleys are 5 x 2 in., and are intended to run at a speed of 350 rev. per min., at which the speed of the spindle may be varied from 0 to 1600 rev. per min. The floor space required by the machine is 22 x 18 in., its height over all is 56 in., and it weighs 170 lb.



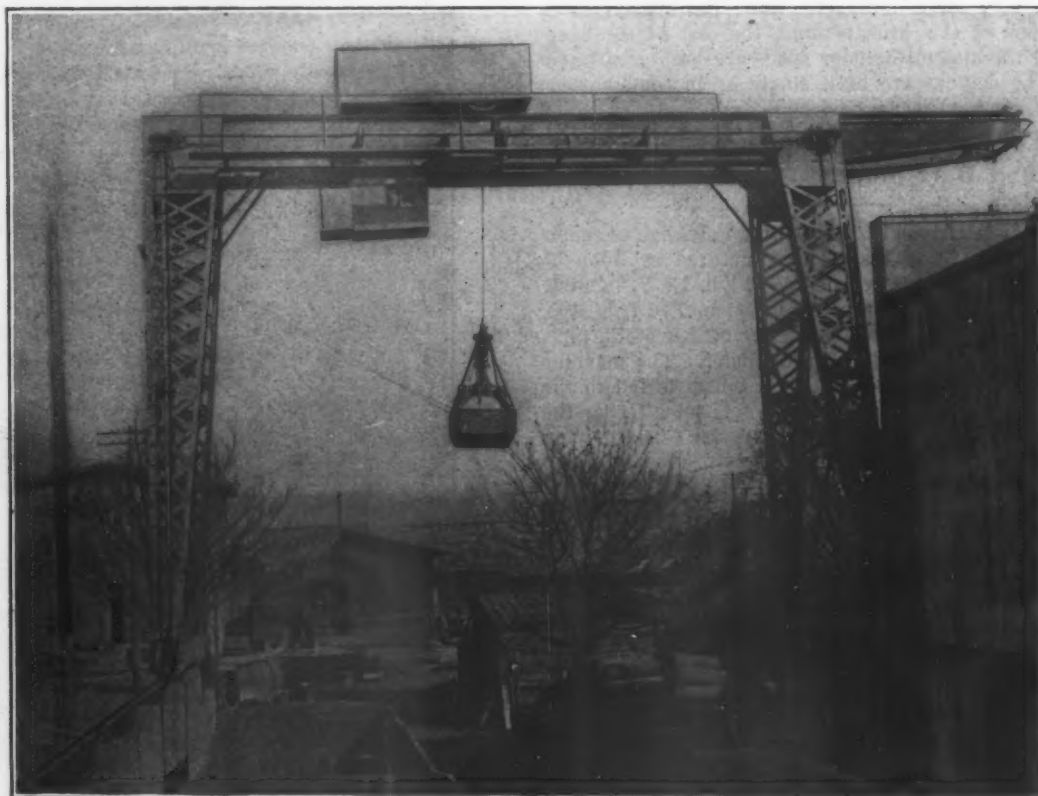
### A Gantry Crane Coal Handling System.

The Dayton Citizens' Electric Company, Dayton, Ohio, has recently completed a modern power plant for supplying light, heat and power to the business and residence sections of the city. A district steam heating system is operated during the winter season by using the exhaust steam for heating, and the distribution covers an area having a radius of about one and one-half miles from the plant. The building is 60 x 128 ft., of reinforced concrete with brick veneering on the front. A basement is provided for the condensing apparatus, which is to be used during the summer months when no heat is sold.

In the design of the plant provision was made for installing eight 500-hp. Stirling boilers, although the actual number in use at the present time is four. These supply the steam for two 1000-kw. Westinghouse-Parsons steam turbines. The breeching for the boilers is carried downward to a flue which runs lengthwise of the building, and

the load the operator can fill the bucket and discharge the load without extra help. The advantages claimed for this system are the low cost and ease of handling material, low cost of installation and maintenance due to size and small number of working parts and large area served.

**The Foundry Exhibit at Toronto.**—The Executive Committee of the Foundry Supply Association, which is preparing for an extensive exhibit of foundry equipment at the Toronto convention of the American Foundrymen's Association June 8-12, will meet at the King Edward Hotel, Toronto, on Monday, March 2. The Toronto exhibit will be the third of its kind. That at Cleveland in 1906 covered 25,000 sq. ft. of floor space, and represented 300 tons. At Philadelphia last year 45,000 ft. of floor space was occupied, and the exhibit represented nearly 500 tons of equipment and supplies. At Toronto 121,000 sq. ft. of floor area will be available. The secretary, H.



The Coal Handling Gantry Crane Installed for the Dayton Citizens' Electric Company by the Cleveland Crane & Car Company.

the top of which is level with the floor of the engine room. Thence the gases are conducted to the reinforced concrete chimney, which is 12 ft. in diameter inside and 180 ft. high. This chimney is of ample capacity to provide for an equipment of four times the present installation.

The layout of the plant, the design of the building and the erection were under the charge of John Branton. The contractor for the building and the underground work was the Abbott-Gamble Company, New York. The American District Steam Company furnished the equipment for the steam heating system.

In an effort to get away from the multiplicity of detail incident to the putting in of a pivoted bucket system, a coal handling gantry crane with grab bucket, illustrated in the view herewith, was designed and built by the Cleveland Crane & Car Company, Wickliffe, Ohio. The runway for the gantry crane was raised about 8 ft. from the ground, which allowed a storage capacity of about 2000 tons of coal in addition to the 200 tons in the bunkers. By means of the gantry crane and grab bucket, coal can be unloaded directly from the cars into the bunkers, or can be taken from the car and deposited in the storage yard, to be rehandled at a future date when it becomes necessary to convey it to the bunkers. The entire operation is conducted by one man. By traveling with

M. Lane, 1924 Prospect avenue, Cleveland, Ohio, notes that nearly all the orders thus far received have been for more space than was used last year, the indications being that the exhibit at Toronto will surpass those that have preceded it. In addition to the most complete representation of molding machines and sand handling equipment yet seen, it is probable that molten nonferrous metals will be available for casting, and one firm is figuring on supplying the molding machines with molten iron.

A bill providing for the creation of a Bureau of Mines will be reported to the House of Representatives at Washington at an early date. The only question undecided by the committee having the bill in charge is whether the bureau shall be under the jurisdiction of the Secretary of Commerce and Labor or the Secretary of the Interior.

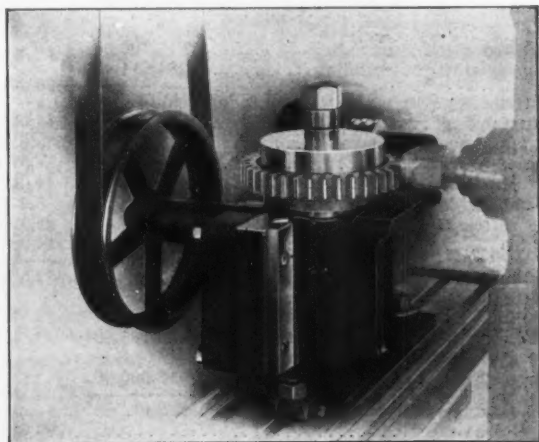
At Toronto, Ont., a writ was issued February 13 for the foreclosure of a mortgage for \$51,299 against E. Helen Currie, Major John A. Currie and the Northern Iron & Steel Company, Collingwood, Ont. The action was taken by Howard K. Wood of New York and is the last step in litigation in which this company has become involved.



### The "Long-Arm" Automatic Tooth Chamfering Attachment.

The automatic tooth chamfering attachment for milling machines, herewith illustrated, derives its name not from any feature in the device itself, but from the company which is placing it on the market, the "Long-Arm" System Company, Cleveland, Ohio. This name was chosen when the company was organized to manufacture safety, electric watertight power doors and hatches for ships, which, being controlled from one point, as the ship's bridge, are in effect handled by a "long arm." Like many another article now on the market, the chamfering attachment grew out of a need in the designer's own shop. Gears enter largely into the principal product, many of which require chamfered or rounded teeth. Since there appeared to be no thoroughly satisfactory device sold for such work, this attachment was designed, and is now manufactured as a side line.

The attachment is adapted to be mounted on the table of a small milling machine and is used to chamfer the ends of the teeth of gears which enter into sliding gear transmissions such as are used in automobiles and often in the speed and feed mechanisms of machine tools. It is claimed to produce a surface of such uniform contour and smooth finish that any further finish is unnecessary. After the work is set up and the cutter and work are ad-



A Milling Machine Attachment for Chamfering the Ends of Gear Teeth, Made by the "Long-Arm" System Company, Cleveland, Ohio.

justed it is not necessary to stop the machine, even to substitute new blanks, while duplicate gears are worked upon. The attachment will chamfer gears of from 2 in. to 9½ in. pitch diameters, and of 4 to 10 diametral pitch. When run at the intended speeds about 12 teeth per minute can be chamfered or rounded. The contour of the chamfering may be changed by using special cams or special cutters or both.

The frame of the attachment is cast iron, is of strong cross section and to it all of the parts of the complete attachment are secured. Two slots are provided for the bolts clamping the attachment to the milling machine table. No tongue fitting the table T slot is necessary for its proper alignment. The bracket is securely fastened to the side of the frame and the principal driving mechanism is held in it. This consists of the main driving shaft with pulley and pinion attached, cam spindle with cam and cam gear attached and engaging with the driving pinion and the rocker arm carrying the intermediate gear connecting the cam gear with the worm driving gear. The worm is of hardened steel of the required pitch, to properly engage with the work to be chamfered. Worms of different pitches are required for different pitch gears, but one worm will drive all gears of one pitch and any number of teeth within the range of the attachment.

The worm slide is adjustable to and from the work spindle and is clamped to the frame in the required position. The worm shaft is carried in this slide and means are provided for taking up wear or lost motion. The work slide is fitted to the frame and its vertical move-

ment is controlled by the cam and cam roll. It also has means for taking up wear. The cam roll pins are secured to the back of the work slide. The work spindle is of hardened steel and is ¾ in. in diameter. To it the work is fitted either directly or with bushings. The cam is of hardened steel and has a cam roll groove cut in its face. It is securely fastened to the cam gear, its periphery fitting into a bored recess in the frame, which gives an additional support to the cam shaft and increases its stiffness. Only one cam is regularly furnished with the attachment, this being designed to give a semi-circular shape to the chamfered ends of the gear teeth. The cam roll is of hardened steel and is placed on the upper cam roll pin when working on the top, or on the lower cam roll pin when working on the bottom of the gear teeth. The cam roll may be easily changed from one to the other cam roll pin by moving the work slide.

The cutters usually furnished with the attachment are double end cutters, having bodies ½ in. in diameter, and are held in the milling machine spindle by a collet. With the attachment is furnished a countershaft having tight and loose pulleys, and a driving pulley and an idler pulley for taking up the slack of the belt. The countershaft is intended to run at a speed of about 72 rev. per min., which gives a speed of 40 rev. per min. to the driving shaft of the attachment, and the milling machine spindle should run at about 900 rev. per min. The intermediate and worm driving gears of the attachment are protected with a cover. The attachment weighs about 80 lb. and the countershaft about 90 lb.

The procedure in using the attachment is as follows: It is first clamped to the table of the milling machine by the two T-bolts, then the cutter is secured in the machine spindle. This cutter is set central with the work spindle on the attachment by moving the table adjusting screws. The table is then locked against longitudinal movement and moved laterally from the cutter, and is centered and located at the proper height to engage with the worm by suitable bushings which fit the work spindle. The gear is then clamped in position by a nut. The setting being completed, the worm slide is pushed forward until the worm enters the teeth of the gear to a depth sufficient to prevent back lash and still permit the rotation of the worm and gears. In this position the worm slide is secured by clamping bolts and the intermediate gear is thrown out of engagement with the worm driving gear. If it is desired to chamfer the top of the gear teeth, the cam roll is placed on the upper cam roll pin, and the pulley is rotated by hand until the highest point of travel of the work is reached; then the table is elevated to the approximate height required and is moved toward the column until the end of the cutter is at the root or bottom of the gear teeth, when the transverse table stop is set. The cutter is next centrally located in the space between two gear teeth by rotating the worm by hand, and the intermediate gear is brought into proper mesh with the worm driving gear and secured in this position. Finally the table is lowered and power is applied to the milling machine and attachment; then the table is gradually raised until the cut is made to the desired depth to give the required chamfer, and the vertical table stop is set in this position, or the knee is clamped to the column. The work now proceeds automatically until all teeth of the gear have been chamfered. In setting up to chamfer the bottom of the gear teeth the adjustment is made when the worm slide is at the lowest point of its travel, the cam roll being placed on the lower cam roll pin.

The Boston Gear Works, Norfolk Downs, Mass., has about completed the new addition to its factory, and is installing new machinery. The new building gives the company 50 per cent. more floor space, a total of 34,000 sq. ft., and a capacity of 150 machines, including 50 automatics. The company has one of the largest plants devoted entirely to gear work in the country, and is in a position to execute orders promptly for all kinds of gearing—spur gears up to 10 ft. diameter, worm gears up to 8 ft. diameter, spiral gears, any ratio, automatic turning work up to 16 in. diameter, and small brass and model work of every description. The company has a large list of standard stock gears.

## New Publications.

**The Story of Iron and Steel.** By Joseph Russell Smith. Pages, 196; 16 mo. Illustrations, 14. Publishers, D. Appleton & Co., New York. Cloth, 75 cents, net.

The author is assistant professor of industry in the Wharton School of Finance, University of Pennsylvania, and he refers to the book as the outgrowth of courses in American industry. It is the latest to be published of the Appleton Library of Useful Stories. The effort has been to enable "an intelligent person to grasp the essence of the complex technical phenomena of iron and steel making without even having to meet technical terms." The book has the faults of any attempt to put in form for popular consumption the facts about a great industry that has a voluminous technical literature contributed by chemists, metallurgists and civil, mechanical, electrical and mining engineers. The "story" might well have been confined to the historical and economic aspects of the subject, but the author has essayed to popularize the technics of iron and steel manufacture. So far as an engaging style could do it he has made the book interesting, and for the most part has conveyed as adequate a notion of what iron and steel making involves as his readers will want. There is a difference between the kind of descriptive writing with which the magazines have made us familiar and the accurate setting down of the prosaic facts of a complex industrial development. The author of the former must often write roundly and make bulk rather than qualified statements, and sometimes this is at the expense of the facts. It is misleading, for example, to speak of "an ore containing one pound of phosphorus to a thousand pounds of iron" as "practically useless unless some means can be devised to get rid of the phosphorus." That cuts the ground from under the foundry, the puddling furnace and the iron rolling mill at a single stroke.

Again, in differentiating between Bessemer and open hearth steel, popular writing falls into very loose and inaccurate statements like the following: "For such pieces as railroad iron or structural girders a small flaw which might be fatal to an engine boiler would make little difference, and, therefore, the cheaper Bessemer steel has been steadily used." In his chapter on the formation of the United States Steel Corporation, Mr. Smith has followed the lines of magazine and newspaper articles in explaining how the consolidation came about. It is only the natural confusion of one not intimately connected with the status of the steel industry that makes the Carnegie Steel Company and the Federal Steel Company merely purveyors of half-finished steel for the manufacturers of finished forms before the day of the large consolidation. The author has the large vision of the popular prophets concerning iron and steel. He sees the day of the elimination of independent producers and the supremacy of the Steel Corporation, due to the early exhaustion of the ore supplies of the former. The scene is dramatic: "Here, then, lies a possible future supremacy in which the trust will stand virtually alone as its rivals die one after another beside their exhausted ore pits." Similarly, the author sees the coming supremacy of the electric furnace in a revolution which will inferentially put the blast furnace on the scrap heap.

But the things to find fault with in Mr. Smith's book, considering its aim and the place it is to fill, are the exceptions. It is quite worth the time of the general reader.

**The "Ironmonger" Metal Market Year Book.** 4 x 6½ in.; 74 pages. Published by the *Ironmonger*, 42 Cannon street, London, England. Price, 2s. 6d.

Last year's edition of this statistical manual of the iron and metal trades was called the "Metal Market Handbook." A new name has been chosen for the second year's publication, and the features of the book have been added to, making it a very useful compendium of information on developments in 1907. Not only are prices and movements of the metals in British markets given for last year, but also statistics of pig iron production in the United States and Germany, and for the latter country the deliv-

eries, month by month, of the various classes of material shipped by the Steel Works Syndicate. For Great Britain full tables are furnished showing the range of prices over a term of years, and for last year by months and in some cases by days. Pig iron warrant statistics are given in detail, also prices of makers' iron in the various districts month by month. The volume is both convenient and valuable.

## The Standard Chain Company's Report.

The Standard Chain Company, Pittsburgh, Pa., has made public the following condensed balance sheet as of December 31, 1907:

Assets.	
Cost of property.....	\$1,131,353.32
Company's capital stock and first mortgage sinking fund bonds, pledged as collateral with trustees for the bondholders.....	84,707.14
Company's first mortgage six per cent. sinking fund gold bonds pledged as collateral to loans.....	77,000.00
John C. Schmidt, trustee, shares of the company's capital stock purchased at cost.....	9,615.00
Investments in shares of the capital stock of the Standard Chain Company of Canada, Ltd.....	27,800.00
Cash on hand and in bank.....	21,139.84
Accounts and notes receivable.....	216,899.08
Inventory of raw material, supplies, material in process, finished product, &c., as furnished by the company.....	384,043.64
Total.....	\$1,952,558.02
Liabilities.	
Preferred stock outstanding.....	\$515,700.00
Common stock outstanding.....	284,871.43
First mortgage six per cent. sinking fund gold bonds outstanding.....	545,000.00
Notes and accounts payable.....	233,018.85
Accrued wages.....	11,570.38
Accrued interest and taxes.....	14,022.26
Unpaid dividends.....	8,427.57
Reserve for depreciation.....	25,000.00
Surplus.....	314,947.53
Total.....	\$1,952,558.02
Net income from operation for the year ending December 31, 1907, after charging bond interest.....	\$143,185.80
Less amount set aside as a reserve for depreciation.....	15,000.00
	\$128,185.80
Less four quarterly dividends of 1½ per cent. on preferred stock.....	32,817.75
Net increase from all sources carried to surplus.....	\$95,368.05

**Ball Bearings on Fans.**—Some time ago the Massachusetts Fan Company, Watertown, Mass., began the use of ball bearings on its large fans. Friction was thereby materially reduced, and the pollution of the air by the oil escaping from bearings avoided. It is now stated that this company is about ready to place on the market a complete line of smaller steel plate fans equipped with ball bearings. The success of these fans will certainly mark a distinct advance in fan blower practice, for both personal attention and the continuous use of oil will be avoided, while the power required will be materially reduced.

At the annual meeting of the Wellman-Seaver-Morgan Company, Cleveland, Ohio, held February 18, the old officers and directors were re-elected. The financial reports that were made regarding the past year's business were very satisfactory. The company has considerable work on hand and reports an improvement in inquiries in the past week or two. While none of the inquiries calls for a large amount of work, they are considered good.

The report of the Nova Scotia Steel & Coal Company, Ltd., New Glasgow, Nova Scotia, for the calendar year 1907 shows profits of \$944,791. The deductions are \$266,886 for interest on bonds, \$274,428 for depreciation, sinking fund, &c., \$82,400 for 8 per cent. preferred dividend and \$299,256 for 6 per cent. common dividend. The balance for surplus was \$21,821, as against \$385,458 for 1906, when no dividend was paid on common stock.



## Iron Mines Held on Short Leases.

### Active Work at Such Properties Planned for 1908.

DULUTH, MINN., February 20, 1908.—Since the settlement of the question of lake ore prices for the coming year there has been some slight gossip as to production and shipments, but the subject is of little interest just now. The Pittsburgh Steamship Company (Steel Corporation) is understood to say that if it handles more than 50 per cent. of its tonnage of 1907 it will be satisfied; but this would seem a pessimistic estimate, for 50 per cent. of its usual tonnage would mean but about 33 per cent. of the usual Oliver Iron Mining Company shipments. It must always be borne in mind that the Oliver Company has large and important minimums at certain mines, and that some of these mines are held on short leases, making it imperative that the minimums, and as much more as possible, be taken out each year. An attempt will be made this year to handle some ore from the Canisteo lands, on the west end of the Mesaba range, where the minimums are heavy, and the permanent washery is soon to be erected. A site has been chosen and all preliminary details are closed up. This washery will handle up to 10,000 tons a day ultimately. This does not mean that the entire capacity will be erected at once or in the coming year.

#### Quietness on the Cascade Range.

The present winter is especially quiet at some outlying locations on the lake ranges. Those districts that have been under the incubus of a lean, siliceous or high phosphorus ore, where mining costs are not low, and whose ore the furnaces do not hunger for, are very quiet. The Palmer District of the Cascade range is one of these, and there is nothing doing at its mines or explorations. A large amount of work has been done there the past year or two by a syndicate in which Messrs. Longyear and Bennett of Minneapolis are interested. The Oliver Iron Mining Company has the Moore mine there, which had a short season last year, with no shipments. It has a good equipment and is capable of a large tonnage produced at exceptionally low costs. At the Empire, a new mine, the ore body has been stripped, but when this contract expired a few days ago work was stopped, and will not resume until spring at the earliest. The Star West, of Corrigan, McKinney & Co., is idle, and is likely to remain quiet a considerable time. This mine has a well planned equipment and is able to ship heavily. Explorations there last year proved the existence of good ore at depth, which was the one question upon which the Cascade range has always been in doubt.

#### The Overhead Stripping Plant Abandoned.

It will be recalled that four years ago the Chicago engineering firm of Hoover & Mason undertook experiments at the Grant mine of the Jones & Laughlin Steel Company with a great overhead grab bucket designed for stripping and ore mining. The experiment has been continued until quite recently, never successfully, and always at high costs. The total expenditure probably reaches half a million dollars. Success might have come under other conditions and where the material to be handled was not so refractory in character. But for Mesaba range stripping the machinery adopted was too rigid in nature, the conditions too hard, and the costs of operation and repairs too severe. The experiment has important results bearing on the general method of moving material under such conditions, and the engineering public is to be congratulated that it was made, and by a firm able to carry it forward thoroughly. The mining company is now arranging to strip the Grant by steam shovel and prepare for mining open pit by shovel at the earliest opportunity. The overburden at the Grant covers an area of some 15 acres to the average depth of about 80 ft., and will require several years. The clam shell device was a 25-ton capacity grab bucket hung from steel cables suspended between towers, each 150 ft. high, and traversing tracks on either side of the proposed pit, some 1100 ft. apart. The bucket with load weighed nearly 50 tons, and was

to be moved along the cables for dumping outside the pit. The plant, it will be seen, was designed for tremendous work. It was most carefully built, and the electrical appliances were most elaborate. The plant will be wrecked and removed. So far there is nothing equaling the steam shovel of standard size and design for the removal of overburden or the mining of ore in place on the Mesaba range, and this in spite of the well-known deficiencies of the shovel from an economical standpoint.

#### Activity on Michigan Ranges.

Operations on the Swanzy range, where the Cleveland-Cliffs Iron Company is opening several mines, will be on a large scale the coming season. This company has been sinking a concrete shaft at one of its new mines, and is now engaged in moving the Escanaba River from too close proximity to the mines. The river bed is largely quicksand, and the removal is prompted by the hope that less water will be pumped than would be the case if the river were left running within 75 ft. of the Smith shaft. The task of removal is greater than the company anticipated, on account of the amount of sand in the bed of the stream, and it will be some time before it is accomplished. At the same location the Oliver Iron Mining Company's Stegmiller property will be worked with a good deal of vigor this year. New and larger equipment is being placed in the mine, which is to be deepened and opened with additional drifts, &c. It is now down 300 ft. This company will drill extensively in the same neighborhood on a tract lying between two of the Cleveland-Cliffs properties. This may result in a fifth mine at Gwinn, as the new town is called.

Near the west side of Iron County, Menominee range, the season is opening auspiciously. The Oliver Company, Pickands, Mather & Co., Corrigan, McKinney & Co., the Pewabic people, the Brule Mining Company, the Buffalo & Susquehanna interests and the Huron, Spring Valley and Florence Mining companies are all at work there, with very encouraging prospects on their newer developments. Many private prospectors and explorers are also working in the hope of finding something worth selling. The Baker will be added to the shipping lists this year by Corrigan, McKinney & Co., and two more, the Tully and Blair, may also be small shippers. A mine now known as the Buckholz will probably ship some ore for Pickands, Mather & Co., while the Mineral Mining Company will have three properties, two of quite good size, instead of two small ones, as now. The Brule Mining Company will have one, possibly two, new mines in operation there before the close of the year. Half a dozen more may be in the lists this year.

The Crystal Falls region is also doing quite well. More exploration is now under way in that section than this time last year, in spite of general dullness in the trade.

The Oliver Iron Mining Company has taken a block of lands in the Baraboo District, which it will probably explore shortly. The shipments from this district were larger in 1907 than in any previous year.

Efforts of the Minnesota Steel Company, the United States Steel Corporation subsidiary, which is to erect a steel works at Duluth, for a bridge to permit it to cross the St. Louis River and connect with a belt line around the head of Lake Superior, have been successful.

D. E. W.

The Iron and Steel Institute will hold its annual general meeting at the Institution of Civil Engineers, Great George street, London, S. W., on Thursday and Friday, May 14 and 15, 1908. The annual dinner will be held, under the presidency of Sir Hugh Bell, Bart., in the grand hall of the Hotel Cecil, May 14. The autumn meeting will be held in Middlesbrough on September 29 and following days. The council will shortly proceed to award Carnegie research scholarships, and candidates must apply before February 29. The awards will be announced at the general meeting. In order to be included in the voting list at the general meeting, applications from candidates for membership of the institute must be received at the office of the institute, 28 Victoria street, London, S. W., not later than March 24.



# THE IRON AGE

Established in 1855.

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## Improvement of the Cast Iron Car Wheel.

The cast iron car wheel manufacturers have long been regarded, or perhaps have regarded themselves, as the successors of an ancient people who were required to make bricks without straw. It has been the staple complaint of the manufacturers of chilled wheels that the railroads made the purchase of wheels a purely commercial transaction, the lowest bid taking the business. The manufacturers have urged that it is impossible to make such improvements in quality as the railroads have demanded, and have contracts awarded solely on the basis of cheapness. This contention does not lose sight of the fact that tests have been prescribed which wheels must pass if they are accepted. There are demands of service which cannot be represented by the drop and thermal tests, which decide whether a batch of wheels shall be accepted. The 100,000-lb. car and the violent and long continued braking of heavy trains in mountain country have put the cast iron wheel to service tests which the best is none too good to withstand. The redesigning of the wheel, with the thickening of flanges and changing the coning of the tread, has done something, but more and more is heard of the failure of cast iron wheels, and more frequently is the opinion given railroad sanction that under cars of high capacity resort must be had to the steel wheel. The *Railroad Gazette*, while convinced that it has not yet been definitely shown what is the matter with the cast iron wheel, so that intelligent effort may be made for its future improvement, points out that the conditions are not to be mistaken:

Probably nobody will deny that the case is serious. That a cure is not yet in sight is evidenced by the large and increasing percentage of steel wheels that are being put under high capacity cars. It is not reasonable to suppose that railroad managers would buy steel wheels for this purpose if, by an advance in price, they could obtain a cast iron wheel to meet their requirements. It is not a case of obtaining business through advertising the superiority of their equipment, nor would these same managers consider for a moment a proposition to put steel wheels under 60,000-lb. cars. They simply feel that traffic demands have outgrown the capacity of the cast iron wheel, and they are obliged to use steel just as they did years ago in passenger cars and engine truck wheels. . . . It is quite safe to predict that until the cast iron wheel is improved along the lines of positive information, the use of its rival, the steel wheel, will continue to increase, and the steel wheel will be placed under a larger and larger proportion of the high capacity freight cars of the country.

The case is not one of a direct issue between the steel wheel and the cast iron wheel as between fit and unfit. Our contemporary suggests that so far as the chilled wheel is concerned, there is a large unexplored field particularly as regards differences in hardness of chill, internal stresses, effect of brakeshoe action, and

the effect of varying temperatures in pouring. Experimentation with steel has increased vastly in recent years the certainty with which results may be counted upon in all engineering work in which it is used. Yet it is safe to say that the studies of the past year in the effect upon the reliability of rail steel, of varying treatment in mill and in track, have yielded more of practical value to the railroads and the steel companies than was developed in a half dozen previous years. Car wheel manufacturers and users have not as great an incentive as the steel manufacturers and steel consumers to enter minutely into an expensive investigation. Car wheel founders have no such accumulated resources as have made possible the maintenance of the technical staffs of the leading steel companies and the splendid results of laboratory work on steel on both sides of the water. But the cast iron wheel interests and the railroads working together might do much in defining the respective fields of cast iron and steel wheels. Both have a great stake in the solution of the questions now overhanging the use of the chilled wheel. There has been a long campaign of assertion and counter assertion, and just now the tendency seems stronger than ever to emphasize the shortcomings of the cast iron wheel. What is needed is such a thoroughgoing investigation of the conditions of manufacture and service as has helped to clear up the situation in steel rails.

## Indirect Manufacturing Expense.

It is an unfortunate and somewhat ill-considered use of words that has accustomed us to the terms "productive and nonproductive" expense. Some managers have a way of harping in most uncomfortable fashion upon the nonproductive element in the plant. To the individual who as clerk, designer or foreman, feels the vital importance of his work in the success of the business, this becomes peculiarly irritating. It becomes doubly so when he is called to account, either individually or collectively, for failure to maintain a certain standard of profits. Certainly the cost of raw material, and of the service of "nonproductive" salesmen are equally important factors; and yet many a relatively irresponsible employee has been subjected to just such ill-considered and unfair criticism, largely through a strange lack of comprehension of conditions, and likewise of human nature, upon the part of manager or owner.

Could the use of the terms "creative" and "non-creative" be properly limited they would far better express the relations existing between the men and the work they do. Though far more accurate in their expression of relationship, the terms "direct" and "indirect" must still be strictly limited in definition to be clearly understood. At all events they do not in the very words suggest a contrast in value of services or of responsibility for success.

Without much chance for confusion or misunderstanding, direct expense may be defined as that which is incurred by direct operation upon the product by which its form, character, use or appearance is changed. This naturally includes all the processes of the foundry and shop, even including painting and slushing. Whether it may also be made to include packing and other similar operations must to a certain extent be determined by circumstances. By elimination, the term "indirect" expense is readily defined as all that is not direct. This naturally includes as principal items all fixed charges, such as rent or interest on investment, depreciation, taxes, power, light, water, &c., the expense of labor and material for

maintenance, and of supervision and general care. But indirect manufacturing expense, which is an element in the cost of production, should be carefully distinguished and separated from the marketing expense as represented by salaries for administration, correspondence, selling, accounting, publicity and the like. The confusion of these two factors has in the past led to much misunderstanding, with attendant injustice to one or both of the departments represented thereby. As a basis for the application of overhead charges or burden, these terms all have their value.

Reference is sometimes made to the "visible" and the "invisible" expense; the terms are self-defining. In one of its simplest forms the visible is transformed into the invisible when the short-sighted manager reduces his clerical force below the actual requirements, and consciously or unconsciously throws part of the work on to shopmen, foremen or superintendents. Here it may be distributed among many, taking from each a little of his time, which in the aggregate, both of duration and cost, is likely to exceed by far that of the clerk. Like the ostrich with his head in the sand, the controlling spirit under such conditions appears to feel satisfied with results simply because he cannot see the expense, although it is there just the same.

How one will haggle over the price of a purchase, will scrutinize it with the utmost care, weigh it and measure it, and check it by every known means. How loosely, on the other hand, will one attempt to measure the product of labor. When it is on a day labor basis the mere opinion of foreman or superintendent is usually accepted in determining the rate of pay which from minimum to maximum efficiency represents a variation seldom exceeding 25 to 33 1-3 per cent.

While price and premium and bonus systems assist materially in establishing a more substantial basis of comparison, still they inherently lack the opportunity for measurement by an external standard. We may reasonably hope that, in course of time, such standards may be generally established for the complicated operations of the machine shop as they are already maintained in fundamental industries and simple operations.

Happily in this is a token that modern methods are rapidly educating the manufacturer to exercise better judgment, and enabling him to reveal the hitherto invisible, largely through specialization and concentration of effort. Compare with the improved method of pattern numbering and classification the old and unfortunately still existent custom of sending a shopman, usually the foreman, and possibly the superintendent, to help find patterns in the loft. In the former case the direct control of the patterns is by one relatively inexpensive individual with a card index at his elbow; in the latter, dependence must be placed in a fallible memory.

With such modern systems, with cost keeping methods up to and too often past the limit, it may with apparent reason be claimed that we have already revealed enough of the heretofore unseen to keep us busy. Certainly we are daily approaching more closely to an accurate measure of the true value of individual labor; we are beginning to realize that it is better to concentrate expense and see it, than to scatter and thereby hide it.

A more tender regard for the rights of stockholders is exhibited in Canada than in this country. The Canadian Board of Investigation, created for the purpose of assisting in the adjustment of disputes between labor and capital, has promulgated the official opinion that the employees of a railroad company "are not entitled

to be compensated at the sole expense of people who have invested their money and who would in return be deprived of their means of livelihood. The public should bear their share." It says that betterment of railroad facilities, now so generally demanded, "can only be obtained where the parties asked to advance the money can see some possibility of return for the advance." This appears to be sound doctrine, equally applicable on this side of the border.

### Workmen's Production in Dull Times.

Many manufacturers have found that their volume of production has not decreased correspondingly with the reduction in working forces. The experience has proved the same under both the daily wage and piece work systems of employment. The scarcity of work has prompted men to put forth their best efforts, and the result has been greater efficiency in both their own labor and in the tools which they operate. Under the hourly wage system the natural incentive has been to make individual labor more valuable to the employer. Under piece work the operative has been impelled not only by this same consideration, but also by the desire to obtain increased production and consequently a larger income.

This is a secondary development of the industrial depression. In its beginning a tendency developed to work slowly in order to prolong employment, to make work in hand endure as long as possible, so that the time of an ultimate laying off or discharge might be indefinitely delayed. A natural transition has been to better effort on the part of workmen, as they see that this will be more likely to help them to retain their positions. Restrictions of unions have become less conspicuous. The piece worker has given less attention to the regulation of the volume of his product—a usual adjunct of this system of wages—the effort being to secure the maximum of earnings without endangering the piece price. The independence of labor, which in some cases amounted to arrogance, has also largely vanished in the desire to retain employment. The result of all this is a measure of production out of proportion to the number of hands employed when compared with the time when full working forces were employed.

Probably there is nothing unusual in this condition, yet lessons may be learned that can perhaps be applied when manufacturing business again resumes full activity. It is certain that a great deal of unused or undeveloped latent energy exists when works are running at a strain in order to produce a maximum of product in a minimum of time. It was a common statement when business was rushing that plants were not being operated on an economical basis. This was partially due to the existence of makeshift methods and appliances that could not be avoided, because so great a demand had not been anticipated and, therefore, had not been provided against. Combined with inadequacy of works, as compared with the demand, was the nerve racking striving to keep up with promised deliveries. In the light of recent experience it would seem that the unwillingness of a certain element of labor also played a very important part in the lack of economical production. Workmen knew that their places could not be filled easily, and some of them took advantage of the fact in determining the amount of work they should do.

Now is the time to prepare for the resumption of business on a large scale. The lessons of money lost, of net earnings reduced, may be studied to advantage. Equipment that could not be obtained in the market when it was most needed should be secured, if doing so



would not conflict with good business practice. At all events everything in the manufacturing plant should be put in first rate condition. As important as anything is the consideration of labor conditions, not as they exist for the plant to-day, but as they should exist in prosperous times. The effort should be made to retain as far as possible the excellent results wrought through the agency of adversity. If labor has been tyrannical under prosperity it is not perhaps impossible to guard against a repetition of so full an indulgence of the trait. A laborer is worthy of his hire, but his employer is worthy of the best work of the laborer under all conditions. Something has been radically wrong if a manufacturing establishment employing 100 men is now producing close to its output when twice the force was at work.

Shop records of merit are maintained in some works, and it has been suggested that such a record would mark the steady, energetic, ambitious man, who should be given preference when curtailment becomes necessary. The knowledge of the existence of the system would have its effect in busy times, it is believed. In small establishments the personal equation of each man is known but in large works this intimate knowledge is lost as heads of departments change, unless it is put on record.

An interesting and important side of the present greater efficiency of workmen is the effect it will have on cost records. In the most efficient cost systems a card gives the time and cost of each operation on each part of a machine or other product for every lot that goes through the works. Comparison is always possible. A variation in cost between lots is watched for and quickly noted and investigated. New records are now being made, reducing cost because less time is required and less cost entailed, time and wage combining to make a lower figure. The same is true of piece work. Apart from the inestimable value of such records in the cost system, they give an excellent line on what individual men are doing under the varying conditions of industry.

#### De Lamater Iron Works Veterans.

The Associated Veterans of the De Lamater Iron Works held their fourth annual dinner at the Hotel Knickerbocker, New York, Friday evening, February 21. The officers of the association are the following: President, Alexander Miller; treasurer, W. M. Parker; secretary, J. V. Ireland. Advisory Committee: H. F. J. Porter and H. B. Roelker. The association is composed of the following persons who were connected with the old De Lamater Iron Works at some time in the career of that well-known New York company, which was organized in 1849 and gave up business in 1889. Nearly all are engaged in engineering work or manufacturing in New York: L. A. Bevan, A. DeBonneville, Jas. Craig, Alex. Cruickshank, Frank Creelman, O. R. De Lamater, Jno. Ferguson, M. Fogarty, A. B. Frenzel, F. A. Halsey, Frederick Hulberg, E. S. Innet, J. V. Ireland, D. M. Junk, Alex. A. Kennedy, Tho. J. McCabe, Geo. W. McLarty, Wm. A. McNab, Alex. Miller, W. S. Miller, Jno. A. Moran, W. M. Parker, H. F. J. Porter, Wm. Prellwitz, A. H. Raynal, T. J. Rider, Jno. N. Robins, Geo. H. Robinson, H. B. Roelker, R. P. C. Sanderson, Jno. Shields, Chas. Van Wagenen, Chas. F. Warren.

The souvenir of the dinner of 1908 consisted of a miniature gold screw propeller wheel, suspended from a bar bearing the legend "Veterans." The appropriateness of this use of the propeller wheel lay in the fact that its inventor, Ericsson, was for many years connected with the De Lamater Iron Works.

**The A. S. M. E. March Meeting.**—The next monthly meeting of the American Society of Mechanical Engineers will be held Tuesday evening, March 10, at 8.15 o'clock, in the Engineering Societies Building, New York. Dr.

Charles P. Steinmetz, member of the society, past president of the American Institute of Electrical Engineers, and professor of electrical engineering, Union University, will deliver an address on "The Steam Path of the Steam Turbine."

#### The Traffic Club of Philadelphia.

At a meeting held in the Bourse, Philadelphia, on December 17 last, the Traffic Club of Philadelphia was organized and committees were appointed to complete some of the details. A meeting of the club will be held for the perfection of plans for future work on the evening of March 3 in the assembly room of the Bourse. A notice to that effect has been sent out by W. H. Heulings, Jr., secretary of the J. G. Brill Company, who is temporary chairman, and I. Elkin Nathans, special agent of the Pennsylvania Railroad, who is temporary secretary. The printed matter issued in behalf of the club shows a long list of Philadelphia manufacturing and commercial houses and local representatives of railroad companies participating in this organization. The nominations for permanent officers, all being residents of Philadelphia, are as follows:

President, Robert S. Perry, president Harrison Brothers & Co. Vice-Presidents—J. W. Rawle, assistant general manager J. G. Brill Company; Powell Evans, president Merchant & Evans Company; F. A. Bedford, division traffic manager American Bridge Company; Edward Knight, member of Biddle Hardware Company; W. A. Sproull, freight agent Cambria Steel Company. Secretary, Henry C. Trumbower, treasurer John Wyeth & Brother. Treasurer, H. S. Bonner, general sales agent Haines, Jones & Cadbury Company. Historian, C. W. Summerfield, secretary Merchants' & Travelers' Association. Board of Directors—N. B. Kelly, secretary Trades League (chairman); J. H. Sinex, president Garrett-Buchanan Company; Edwin F. Sellers, traffic manager Harrison Brothers & Co.; Theodore F. Sage, traffic manager Phoenix Iron & Bridge Company; Charles Bowden, traffic manager Pennsylvania Salt Mfg. Company; W. H. Wilshire, manager Consolidation Coal Company; W. L. Malze, purchasing agent Philadelphia Rapid Transit Company; George J. Lincoln, commercial agent Chicago, Milwaukee & St. Paul Railway; John B. DeFriest, general agent Union Pacific Railroad.

#### The Southern Steel Company's Affairs.

W. H. Hassinger and John E. Morris, Birmingham, Ala., and T. Stonewall Kyle of Gadsden, Ala., have been elected by the creditors as trustees of the property of the Southern Steel Company. The receivers surrendered the management to the trustees February 20. James T. Woodard, Robert B. Van Cortlandt, Walter T. Rosen, Franklin Q. Brown, Otto T. Barnard, Cornelius Vanderbilt and W. P. G. Harding are named as a reorganization committee. This committee has addressed a circular to holders of first mortgage bonds and collateral trust notes saying that in view of the default on the interest on various securities of the company and the cessation of operations at its plants, with the imminent possibility of disintegration of the properties, the committee has been formed for the protection of the holders of bonds and notes, and to prepare a plan of reorganization.

A petition was filed in January at Birmingham for the return of certain properties in Alabama to the possession of the Lacey-Buek Iron Company, from which the Southern Steel Company acquired them. A similar petition was filed at Chattanooga in which the trustee under a mortgage securing \$600,000 bonds of the Chattanooga Iron & Coal Company, and that company itself prayed for the possession of the properties of the company now held by the Southern Steel Company.

The Locke Regulator Company, Salem, Mass., has again been successful in sustaining its right to manufacture the Locke engine stop, this time before the United States Circuit Court of Appeals. The decree of the lower court was affirmed "with costs."



# Metallurgical Session of the Mining Engineers.\*

## Discussions on the Coming Investigation of Steel and on Segregation.

The Wednesday morning session of the New York meeting of the American Institute of Mining Engineers, February 19, 1908, was devoted to subjects of metallurgical interest. The first paper was on "The Work of the Testing Department of the Watertown Arsenal in Its Relation to the Metallurgy of Steel," by James E. Howard, engineer of tests, Watertown, Mass.

### The Watertown Investigation of Steel.

Mr. Howard indicated the scope of the tests to be made, quoting from the programme as approved by the Chief of Ordnance, U. S. A. The first item of the inquiry is ingot metal, open hearth, Bessemer and crucible—fluid compressed and uncompressed. While questions of chemical composition, segregation, piping and the grosser cavities have frequently been given attention, defects of continuity of structure, which manifest themselves in the working of the metal and at the final stages cause distrust of the finished forging, have generally been neglected. The chief feature to be taken into consideration at the time the metal is in the ingot state is believed to be that of structural soundness and continuity. Evidence seems to show that structural discontinuity in the ingot is not corrected in the subsequent forging operations. If the direction of the stresses in the subsequent tests is in the direction of the flow caused by the various operations the defects may pass unnoticed. Their presence is revealed, however, by the application of stresses applied normally to the lines of structural discontinuity. The question of streaks has been much discussed. It is believed these streaks have their origin in the ingot and are due to lines of structural unsoundness. In the case of steel rails, for example, structural continuity of the metal is highly important.

The second item in the inquiry includes blooms, billets and rolled and hammered shapes from ingots, including finished products of all kinds. Working temperatures, reductions in the rolls or under the hammer and the number of passes in the rolls should be ascertained. In addition to the question of the influence of temperature on final properties is the question how much or how little work at a given temperature is essential to attain maximum tensile strength and the display of those other features which accompany the tensile test.

Mr. Howard asked that the members of the American Institute of Mining Engineers indicate the specific tests which, in their judgment, should be made in the contemplated examination of ingots and rolled shapes. Two committees are contemplated, one on structural members and the other on metallurgical matters. The latter is composed of Major C. L'H. Ruggles and James E. Howard, Watertown Arsenal; William R. Webster, Prof. Edgar Marburg and Dr. Chas. B. Dudley; S. M. Vaulcain, Baldwin Locomotive Works; E. F. Kenney, Cambria Steel Company; F. W. Wood, Maryland Steel Company; A. A. Stevenson, Standard Steel Works.

As part of the discussion of this paper there were offered the views expressed by those who attended a meeting, held in the council room of the American Institute of Mining Engineers September 24, 1907, to consider appropriate subjects for investigation at the Watertown Arsenal laboratory, with the money which had been appropriated by the Government for such purposes.

### Suggested Lines of Investigation.

R. W. Mahon of the New York Central lines proposed an investigation of the cause of shelling of the tread of locomotive tires, and the best composition to prevent shelling; whether or not 700 to 850 degrees C. are the best temperatures at which to anneal steel castings, and what is the best temperature at which to anneal vanadium steel castings; a thorough investigation of the question of homogeneity in steel plates as rolled from ingots and as rolled from blooms; the best method

of shaping and annealing steel axles; the effect upon the value of the finished product of each of the modifications at present in considerable use in this country, and the effect of repeated annealing?

A. A. Stevenson of the Standard Steel Works, a member of the committee, invited to co-operate with the Watertown laboratory, referred to his remarks made at the meeting mentioned.

### Views of Steel Manufacturers.

A written discussion offered by Charles L. Huston of the Lukens Iron & Steel Company, Coatesville, Pa., explained that variation in yield point, elongation and reduction of area may be produced by the manner of heating and by manipulating in the rolls, and also by the proportions of the test pieces. Speaking of transverse tests, he said he could vary the proportions of a test piece and the conditions of testing so as to get any results called for within limitations, and that it is the same with ingots if it is known what they are furnished for. He suggested that in addition to the proposed division of grades, as open hearth, Bessemer and crucible steel, they should be carefully divided into mild steel, steels of medium carbon and steels high in carbon, as well as the different alloy steels, on account of their very different action in cooling and solidifying from the molten state, which action largely affects the question of chemical uniformity, as well as of structural continuity. He anticipates that little effect will be observed in the final product from work done at the higher temperatures above the point of recalcence, as the work done at these temperatures does not permanently affect the structure of the steel to a great degree. He indorsed the use of a softer range of steel for boiler and structural work in the belief that a closer factor of safety could then be used. He considered that in practice, instead of allowing pressures or stresses in proportion to the actual minimum tensile strength obtained, which introduces a temptation to use just as hard a steel as can be passed under the inspection and thus avoids the use of great thickness to carry heavier stresses, results would be better if the reverse were done by establishing the unit stresses in the finished structure and then specifying the range of tensile strength for steel which would be allowed to stand these unit stresses. For instance, given a unit stress of 12,000 lb. per square inch, permit the use of steel anywhere between 50,000 and 60,000 lb. per square inch, provided it has a ductility represented by 1,500,000 divided by the tensile strength in pounds. This would encourage the use of soft steel for the same work, and the writer believed would result in much greater safety to the traveling public.

F. N. Speller of the National Tube Company agreed with a view that had also been taken by Mr. Stevenson, that all inquiries into the origin of the defects in steel should go back of the ingot, starting with the metal from the blast furnace and giving due regard to its composition, treatment, refining, ladle reaction, oxidation, &c. For example, in manufacturing soft steel sufficient ferromanganese may be added to deoxidize the metal, and by a good reaction in the ladle flush out the steel, so that the oxides formed are practically all absorbed by the slag. A slight change in the relative proportions of silicon, manganese, or other elements in the pig iron may alter conditions entirely, giving a ladle cinder incapable of absorbing the product of the oxidation from the steel, and resulting in more or less trouble all through the process. Yet in this case the chemical composition and structure of the ingot may be normal. The steel, however, is liable to develop defects under subsequent mechanical treatment. The fact that lines of weakness are developed under stresses applied transversely to the rolling does not necessarily prove the metal to have been structurally unsound in the ingot. To his mind it is more often evidence of lack of lateral work. In the National Tube Company's experience with

\* The discussions herein abstracted will be revised by their authors and printed in the Transactions of the American Institute of Mining Engineers.

soft Bessemer steel in welded pipes most, if not all, structural defects in ingots are overcome by proper treatment in rolling.

#### Experiences with Rail Steel.

J. P. Snow of the Boston & Maine Railroad cited recent experiments with crescent breaks in rails, which would seem to furnish ideal fields for investigation. Rigid road beds and the very cold winter of 1906, 1907 were responsible for an unprecedented number of breaks, mostly base fractures of the crescent type. He defined and described two classes of flaws, gas seams and rolling flaws, and where they are found. He showed samples of failed rails with portions cut and polished. Gas seams he attributed to gas bubbles in the ingot, and rolling flaws to cracks, tears or folds in the surface of the ingot or bloom. Of a number of photographs he passed around one was of a piece of an ingot badly affected with gas holes, another showed the same piece forged on all sides under a drop hammer, and a third the same cleaned up in a planer and cut into two pieces. Two other photographs were the same exhibited by Mr. Huston to the American Society of Testing Materials, June, 1906, which represented the best practice in low carbon open hearth steel boiler plates. He believed that it would be desirable for the Watertown laboratory to try to trace flaws (gas seams and rolling flaws) to their origin. Openings in low carbon steels will weld up during rolling much better than those in high carbon steels, but for rails comparatively high carbon steel is necessary. If gas holes cannot be welded in this grade of steel, ingots must be cast so that they will not be formed. Slow teeming at proper temperatures may suffice, sink heads producing fluid compression may be resorted to; recharging with silicon as advocated by Sandberg may help; but it is hoped that some way will be found to manufacture rails substantially free from manifest flaws, which are proved to have led to such excessive breakage in the recent past.

A written discussion on Mr. Howard's paper submitted by Charles S. Churchill of the Norfolk & Western Railroad, advanced the opinion that the most needed thing is more definite information on the different methods of rolling steel from ingot to bloom and from bloom to finished shape. For example, what are the characteristic differences between blooms of steel rolled from the ingot with a reduction of  $38\frac{1}{2}$  sq. in. per pass in seven passes during  $1\frac{1}{4}$  min., and with a reduction of 27.7 sq. in. per pass in 13 passes during  $2\frac{1}{4}$  min.; and what are the respective characteristic differences between finished steel rolled from the bloom to finished shapes of the same size with a reduction of 7.4 sq. in. per pass in 11 passes during  $1\frac{1}{4}$  min., and with a reduction of 4.7 sq. in. per pass in 11 passes during  $3\frac{1}{4}$  min., with some delay in each case before the final pass, sufficient to make the temperature of the finished steel the same in both cases, the bloom in the second instance being reheated before rolling. In the first investigation one important matter would be the determination, as far as practicable, of the relative amount of welding that has taken place in the segregated portion of the ingot—that is, the upper half.

#### Discussion on Segregation in Steel Ingots.

The remainder of the forenoon was taken up with discussion of Prof. H. M. Howe's paper on "Piping and Segregation in Steel Ingots," presented at a previous meeting.

Written comment on this subject from P. H. Dudley of the New York Central Lines dealt with the difficulties of differentiating between reliable and unreliable data on variable methods of manufacture, chemical composition of the alloys of steel, mediocre practice, and that of the highest state of the art. Modern practice and large outputs in Bessemer steel have reversed the effects of the time element by cutting short the chemical reactions of the recarburizer and the elimination of the oxidation product before teeming; but a check has been given to the shrinkage of hot to cold metal by charging the ingots into furnaces after teeming. Thus there has been a reduction in the number of true pipes in rails. Segregation is more harmful in large ingots kept in vertical position than in small ingots placed in horizontal furnaces. Other defects of ingot structure are due to entrained slag,

oxides and gas, particularly at the junctions of the columnar structure in the corners of the mold and the upper parts of the ingots. Some causes for failure of rails, as the flow of metal in the bearing surfaces of the head, mashing of the ends and the flaking of the metal from the upper corners of the head are due to insufficient cubic or volume elasticity of the metal to receive, sustain and distribute the passing wheel effects to the rest of the section. The difficulty may be due to the low grade of metal or entrained slag and oxides or other impurities in an intended high grade of metal from the chemical composition. Concerning specifications he stated that even if the same chemical composition is required the product will not be the same from any mill in the country because different ores, different size and shape of ingots, different systems of rolling and treatment modify the product either for wear of the rails or their safety as girders. Mills, he declares, which make five or six rails per ingot and cut the blooms into two parts and roll into two and three rail lengths produce a safer product as a girder than those that roll five and six lengths as a single bar and afterward cut to rail lengths. The writer's experience confirmed to an extent what had been said of the advantage of casting each ingot with the large end up; there is also the advantage that it permits more of the impurities to escape from the setting steel without being caught in the corners of the columnar structure.

The writer had found the most important essential for making sound ingots to be allowing more time for recarburizing either in the converter or ladle before teeming. Professor Howe did not distinguish between high and low carbon steel. Steels from 10 to 15 points carbon usually rise in the ingot, and do not form pipes, and it is necessary to cast such metal in bottle mouthed molds and cap them to prevent overflowing. Increasing the carbon makes the tendency more pronounced to form a pipe from what is usually considered shrinkage of the metal, unless other methods are used to obviate it. Teeming with a small size nozzle is also conducive to sound ingots and freedom from pipes and seams. The segregation of the ingot, while more or less associated with the piping of the upper part, may be also quite independent. Rails manufactured of the sections and specifications of the writer have shown comparatively few pipes after years of service. The opportunity for the metalloids to segregate and rise to the top of the ingot is not as favorable in the horizontal furnace as when the ingots are charged directly into vertical furnaces. The segregation was not as marked in the high carbon steels as it is now with ingots which are kept in vertical position from the teeming to the blooming. The general experience of teeming shows that in small ingots which set quickly the segregation is limited. The work done by the writer between 1890 and 1900, when cupola metal was used and care taken in the composition shows by actual experience in the track that sound ingots have been made in which piping is the least of their defects. This can be repeated in larger ingots with the advanced metallurgical knowledge of to-day. Mention was made of 95-lb. rails high in carbon and low in phosphorus, made from 14-in. ingots in 1891 and 1892 for the Boston & Albany, and 75-lb. rails for the Mohawk & Malone railroads. Most of these are still in the track. The heats after being carburized in the converter were poured and remained in the ladle five to six minutes to allow the chemical reaction and the escape of oxidation products before teeming the ingots, which were stripped, then thrown down in the pits and charged into horizontal furnaces for equalizing the heat before blooming. The blooms were cropped until sound steel was obtained, then chipped under the steam hammer, and again charged into horizontal furnaces for reheating and finally rolled into rails in 11 passes. They were finished between 950 and 1000 degrees C., as nearly as could be measured by copper ball and water pyrometer. Rolling the rails cold for wear must not be at the expense of their safety as girders. Commencing in 1893 Scranton rails were marked A, B and C for the top, middle and bottom rails from the ingots. The A rails showed that occasionally there was gas entrained slag and other impurities at the junctions of the columnar structure. The B and C rails hardly showed, after many years of



service, any breaking down of the inside running edge of the rail, either upon curves or tangents. The fractures of these rails in the track even under heavy traffic have been slight, and but few more have occurred in the A than in the B and C rails. Some of the upper ends of the A rails have crushed or worn slightly faster than the other portions of the rail under heavy traffic. Imperfections were mostly in A rails. There is often a well defined central core, which is not as readily seen in the B rail, and only rarely noticed in the C rail. The practice of marking rails, the writer believed, will soon be required of every mill. It has been done by the Lackawanna Steel Company since 1893. The segregation is pronounced in large ingots, particularly from vertical furnaces, and often included slag is found in the bearing surface of the head, which spreads laterally under the moving wheels and produces a split head, while there is scarcely a trace of pipe in the web. Large stubby ingots result in less split heads from segregation and entrained slag than small long ones. In Mr. Dudley's opinion the shortening of the time in the Bessemer department from recarburizing to teeming, has contributed to the inferior product of the large outputs of Bessemer rails. The segregation in the long ingots particularly when the phosphorus is at 0.1 is a serious matter for our present service of high speed trains; but the wear is a good deal better from high carbon low phosphorus rails. The corners of the mold at one mill have been made of larger radius, and this has helped some to relieve the columnar structure in the corner of much entrained slag and imperfections formerly found in the corners of small radii; but the shape of the molds does not permit of the escape of a very large amount of slag and impurities under rapid teeming. Steel made by the basic open hearth process in which proper time is allowed for the escape of the oxidation product has proved exceptionally tough and free from included slag. Apparently it is well adapted not only for a slow rate of wear, but safety in the sections as girders. The writer thought it safe to say from present studies that ingot structure will improve more in the next year than it has in the past decade.

Professor Howe continuing the discussion of the paper explained why there is more segregation in large ingots than in small ones. He also exhibited carbon iron diagrams of a number of different sized ingots poured from the same ladle. Rapid fluctuation in the amount of segregation is particularly noticeable near the top of the ingot. He believed that the idea must be abandoned that large size is the chief cause of segregation; quantities of large and small ingots will average about the same in segregation, though individual cases may vary a great deal. The main points impressed by the speaker were that landlocking lessens segregation, that quiet favors landlocking that slow cooling favors quiet, and that large size favors slow cooling.

H. W. Hixon, metallurgical manager of the Mohn Nickel Company, Ontario, believed that the open hearth process gives better rails because it has time to get rid of the included gases, and the electric process still better because there are no included gases. He recommended putting the steel in a reservoir to let the gases escape before putting it in the ladle. Dr. R. W. Raymond spoke of the Héroult furnace which he had seen in Germany, and the remarkably high grade steel produced from it, attributing the quality largely to the fact that the steel in its molten condition remains in the furnace a long enough time for the gases to escape.

A. A. Stevenson spoke of high carbon steel, or steel having 0.60 to 0.70 per cent. of carbon, and the experience had with it in respect to segregation, &c. In one case an ingot was poured out before it was entirely solidified to see what took place in the cooling. Segregation is of little moment, in this speaker's opinion, if enough of the top of the ingot is discarded. In his experience he had not found what was previously referred to as onion skin freezing; that is, the solidification of the ingot by concentric lamina, but only the pine tree crystal form. Protected molds, he averred, show less pipe in the ingot. Casting ingots with the large end up has been practiced for the last 15 years with the open hearth process, not the Bessemer, and the company with which

he is connected uses no ingot extractor, but simply dumps the ingots out. Casting ingots small end up made no observable difference in the length of the pipe.

Professor Campbell of Columbia University stated that he had found by the microscope that shelling is due to small particles of slag or included gases, and contradicted the old belief that the temperature does not make much difference in finishing. The amount of reduction in the rolls also has much to do with the character of the product.

At the afternoon session of Wednesday the first paper was by Thomas H. Leggett on the subject "Present Mining Conditions on the Rand, South Africa." This was followed by remarks by J. H. C. James of the Institute of Mining and Metallurgical Engineers, who has recently been in the Rand. A paper was presented in extract by the secretary, submitted by T. Lane Carter, on "The Chinese on the Rand."

#### A Canadian Briquetting Plant.

Edward W. Parker, Washington, D. C., in a brief paper presented data concerning a briquetting plant at Bankhead, Alberta, Canada, operated by the Bankhead Mines, Ltd. The original plan called for two units of 10 tons capacity per hour each. The second of these is now being installed. The coal is anthracite, more friable than the Pennsylvania anthracite and therefore making more dust. This was thrown away formerly, but now goes to the dust bin and is utilized. The coal analyzes 0.5 per cent. moisture, 8 per cent. ash, 83.5 per cent. fixed carbon and 8 per cent. volatile matter. In the briquetting process pitch is introduced by means of an atomizer. The output with both units operated will be about 16,000 tons a month and the briquettes sell at \$4 a ton at the plant.

In the discussion on the paper, W. H. Blauvelt answered a question concerning the Semet-Solvay briquetting plant at Detroit, Mich. Coke breeze and pitch are used. As the coke breeze supply is limited, some anthracite is mixed with it. A nearly smokeless briquette is required since the briquettes come in competition with anthracite. The speaker referred to the way in which briquetting had made available for fuel the lignites and semi-lignites of the far West. When briquetted they no longer break down and the result is a good fuel. In the experience of his company with briquetting in various districts it has been found that large briquettes are desirable where they are to be used for making steam. For the domestic trade small briquettes are made on a rotary press. As many as seven plants are now operated for the manufacture of small briquettes for domestic use and for locomotive firing.

James Douglas remarked that binder would be extremely expensive for lignites, not being available locally. This led to a question concerning by-product coke ovens and Mr. Blauvelt said that while it was easy to sell coke from by-product ovens in the West, there was no market for tar. Mr. Douglas spoke of the Santa Fé as the only road in the Far West that imports creosote. If by-product ovens could be put up in that section he thought the tar could be sold to the railroads, but questioned if the farmers were yet educated to the use of sulphate of ammonia. Replying to a question as to the cost of manufacturing briquettes, Mr. Blauvelt said that it ranged from 60 to 80 cents a ton for briquetting, to which should be added the cost of 8 per cent. of pitch at \$6 to \$8 a ton. This would mean a total cost for briquettes, including pitch, of from \$1 to \$1.60, according to the locality and amount of output.

Prof. H. M. Howe took the floor for a few moments to sum up the points brought out in the discussion of his paper on segregation.

The last feature of the afternoon was the making of paraffin ingots in a wooden model, to demonstrate what can be done in the compression of semi-liquid steel ingots in larger apparatus. The inventor, N. Lillienberg, Philadelphia, manipulated the model and explained its principle. A description of his apparatus was printed in the *Journal of the Franklin Institute* for February, 1908.

At the session of Wednesday evening interesting data were presented by Joseph A. Holmes, Washington, D. C., on recent coal mine disasters in the United States.



**Election of Officers.**

At the annual business session held Tuesday morning, February 18, the following officers were elected: President, John Hays Hammond; vice-presidents of the council, J. Parke Channing, New York; John B. Farish, Denver, Col.; F. W. Denton, Painesdale, Mich.; members of the council, Joseph H. Shockley, Goldfield, Nev.; C. R. Corning, New York; R. V. Norris, Wilkes-Barre, Pa. The three directors whose terms expired this month were re-elected, namely, James Douglas, James F. Kemp and Albert R. Ledoux, all of New York. The secretary of the council, Dr. R. W. Raymond, was re-elected.

## The Empire Steel & Iron Company's Report.

From President Leonard Peckitt's report to the stockholders of the Empire Steel & Iron Company we take the following:

The directors have been successful in placing the finances of the company in such condition as to insure the carrying out of an important beginning of plans long in contemplation with regard to a radical improvement of the properties. Not only was this accomplished without increasing our indebtedness, and without asking the stockholders to subscribe additional capital, but the financial obligations have been reduced and our working capital materially increased.

The management reports that on account of a lack of funds to finance the Alleghany Ore & Iron Company, operating furnaces and mines in Virginia, our investment in that company was rendering no return, and this largely influenced the directors in arriving at a decision to sell the stock held in our treasury. The sale of this stock on a favorable basis was only made possible by virtue of that company's extensive ore lands, and our position as the largest holder of stock could only have been rendered valuable by adding considerable capital to the investment, which the condition of this company by no means warranted.

From the standpoint of earnings the past year was by far the most successful since the organization of the company. The following is a statement of business for the year ending December 31, 1907:

Total net earnings from operations (including dividends and interest on securities in treasury).....	\$602,402.75
Deduct allowance for improvements, permanent repairs, depreciation of mining properties, &c.....	85,146.60

Net profit for year.....\$517,256.15

The following charges were made against the profits as shown above:

Depreciation in values of raw material and pig iron stocks, December 31, 1907.....	\$59,735.62
Sinking fund for bad debts.....	9,804.32
Dividends on preferred stock.....	150,000.00

After closing the books, therefore, at the end of the year, there is shown a surplus of more than \$1,000,000.

The full dividend of 6 per cent. on the preferred stock was paid and the directors considered carefully the advisability of making a payment on the accumulated dividends, which now amount to 18 per cent., but in view of the conditions existing in the money market toward the close of the year, rendering collections exceedingly difficult, and also in view of the necessity of carrying a large stock of material at the furnaces, it was deemed wise to retain this money in the business until the return of more normal conditions. Furthermore, it should be borne in mind that this surplus was created for the purpose of providing funds to carry on the improvements at the furnaces and mines, and also to allow adequate working capital for conducting a large business. By applying the available funds to this work, in our opinion, the returns will in a few years be much greater, and meanwhile there is every reason to believe that dividends can be maintained on a liberal basis. By paying the back dividends gradually the entire obligation to the preferred stockholders can ultimately be cancelled without the necessity for funding the present deferred payments and without depriving the company of money needed for purposes previously set forth in this report.

We submit for comparison the following statement of the result of business year by year since this company was incorporated, the first year covering a period of nine months:

Year.	Tons ore mined,		Net earnings.	Dividends.
	Tons pig iron made.	New Jersey mines.		
1899.....	150,481	8,416	\$320,666.30	\$81,595.31
1900.....	201,847	40,637	244,523.85	106,395.00
1901.....	185,990	83,414	85,271.52	71,043.00
1902.....	186,485	59,179	203,087.37	75,000.00
1903.....	245,513*	107,905	308,651.02	75,000.00
1904.....	163,202	111,375	88,154.16	75,000.00
1905.....	172,763	93,568	91,511.96	75,000.00
1906.....	205,477	131,740	300,695.07	112,500.00
1907.....	234,538	146,253	517,256.15	150,000.00
Totals.....	1,746,296	782,487	\$2,159,817.40	\$821,533.31

\* Two additional furnaces operated under lease.

From this it will be seen that in all important respects the results during the past year have surpassed all previous records, and it might be interesting to note that our profits from all sources have amounted to \$2.20 per ton of iron produced.

In a statement of this kind it is difficult for us to make a comprehensive report on the outlook at the mines in New Jersey, but you will see that the tonnage of magnetic ore mined exceeds that of all previous years. Looking toward continuous development in the future we have had a magnometric and geological survey made on both properties, and the results have been highly encouraging.

Last year the directors authorized an expenditure of money sufficient to erect at Mount Hope a modern central power station and separating plant, equipped with crushers, screens, rolls and magnetic separators, together with the necessary storage bins and facilities for handling 600 tons daily. The method heretofore in use in the preparation of this ore involved the system of what is known as "hand-cobbing," which is expensive and unsatisfactory. By mechanical separation the ore can be put on cars at a much lower cost and will contain a higher percentage of metallic iron; for instance, the average metallic contents of the ore shipped from Mount Hope at present is about 59 per cent., whereas, with the system that we are now installing, the ore will average 63 to 65 per cent. in iron. The machinery is now being installed, and it is our expectation to have the plant in full operation by July 1.

In the early months of the year very high prices were obtained for pig iron, and contracts for large tonnages were made, extending well into the year. There was every indication of a continuance of these conditions until the early fall, when signs of financial troubles became apparent, and, thereafter, within a short time, the demand was reduced to a minimum, prices rapidly declined, and a large number of the consumers who had purchased iron under contract found themselves unable to accept shipments in accordance with agreement. This necessitated our blowing out one furnace after another, until only two stacks out of eight are at present in blast, the monthly product of which is about 5000 tons of iron. The combined annual capacity is approximately 250,000 tons.

The properties of the company at this time consist of three furnaces at Catasauqua, Pa.; two furnaces at Reading, Pa.; one furnace at Topton, Pa.; one furnace at Macungie, Pa.; one furnace and 2400 acres of land at Oxford, N. J., together with mineral rights on about 8000 acres additional; 1700 acres of land at Mount Hope, N. J.; 115 acres of land at Pine Island, N. Y., containing a large body of limestone.

The following is a condensed balance sheet taken upon closing the books December 31, 1907:

Assets.	
Real estate, plants and machinery.....	\$2,996,009.60
Stocks and bonds.....	1,001,607.00
Cash in bank.....	\$230,325.71
Notes receivable.....	450,100.00
Accounts receivable.....	217,691.55
Inventories—Pig Iron.....	183,684.67
Raw material.....	256,361.05
Supplies.....	77,391.37
	1,415,554.35
Total.....	\$5,413,170.95

<i>Liabilities.</i>		
Capital stock—Preferred.....	\$2,500,000.00	
Common .....	1,254,770.00	
		\$3,754,770.00
Accounts payable.....	207,536.16	
Bills payable.....	134,543.75	
Payrolls .....	24,312.76	
Dividend No. 18, payable January 2, 1908 .....	75,000.00	
		441,392.67
Fund for depreciation and bad debts.....		84,356.95
Profit and loss.....		1,132,651.33
Total.....		\$5,413,170.95

It is impossible for us to make any predictions as to the business for the present year, but in closing this report, we wish to say that in our opinion this company and the iron and steel trade in general owe a debt of gratitude to Judge E. H. Gary and his associates in the United States Steel Corporation for the influence which they have recently exerted in an effort to prevent what might otherwise have been a complete demoralization in the iron and steel business of the country. Experience oft repeated has evidenced the untold damage caused to business in general by endeavoring to force sales of iron in times of depression. The continuation of operations in the face of adverse conditions and the consequent cutting of prices have never resulted in good to any branch of the business, and we commend heartily the wisdom of the plan for all interests, both buying and selling, to join their efforts toward maintaining prices of iron and steel products on a fair basis.

## Heavy Rolling Mill Machinery.

### An Unusual Shipment Inspected at Pittsburgh.

The United Engineering & Foundry Company, Pittsburgh, is furnishing some heavy equipment for the new plant of the Indiana Steel Company at Gary, Ind., and the La Belle Iron Works at Steubenville, Ohio. Having it ready for shipment, the company sent out invitations last week to members of the Engineers' Society of western Pennsylvania and also to superintendents of steel works and rolling mills in the Pittsburgh District to assemble at the Frank-Kneeland department at Fifty-fourth street and Allegheny Valley Railroad Tuesday evening, February 25, and view this machinery. The invitation was largely accepted, over 250 persons being present. This equipment is noteworthy for its massive size, and it has some special features, of which some details will be of interest.

#### Indiana Steel Company Rail Mill Lifting Tables.

The visitors were first shown the tables to be used at the three-high blooming mill of the Indiana Steel Company's rail mill. The ingot, after leaving the soaking pits, passes through four stands of 40-in. two-high blooming mills, set tandem, so that it passes directly from stand No. 1 to stand No. 2, and so on. After leaving the fourth stand it comes on to the adjacent lifting table and is delivered to the three-high blooming mill. The billet reaching the blooming mill is approximately 15 x 15 in. and weighs about 8000 lb. In designing the tables the limiting features were to reduce the total depth as much as possible, on account of avoiding deep pits, which might approach too close to the water level, and to maintain as light and strong as possible the lifting portion, with the idea of increasing the rapidity of action. The table is lifted by a 250-hp. Westinghouse electric motor, designed for very heavy torque and geared to a crank shaft which operates the tables through link and bell crank motion. As the scale from the rolling will be very heavy, the operating mechanism was not placed beneath the table, but an extension by an arrangement of shafts with rockers was provided. Four bearings were used, two supporting the weight of the table and two taking the thrust of the lifting arrangement on each rock shaft. To avoid the necessity of absolute alignment of the four bearings, the Oldham couplings were introduced between the two sets of bearings, giving the effect of a universal joint, and at the same time maintains great mechanical strength.

As the table is to operate very rapidly a thorough balancing device is necessary in order that the motor may start and stop quickly. Two hydraulic cylinders were attached to the rock shafts, through levers and links, the cylinders receiving their pressure from a tank partly full of water and partly full of air at about 500 lb. pressure. The tanks are large enough to be entirely filled with air at 100 lb. pressure, and then pumped up with water to 500 lb. pressure when the tables are down. When the table rises the tanks are so proportioned that the pressure falls to about 300 lb. per square in. The cylinders are large enough to overbalance the tables about 25 per cent., with 500 lb. pressure on the rams, and with a drop of pressure to 300 lb. per square inch the tables are about 25 per cent. underbalanced. Thus when the motor starts to lift the table is overbalanced and there is a large excess of torque, tending to accelerate the motion of the table. When the table approaches the top position the balance is decreased so that there is an excess of torque tending to stop the table. On the down motion the underbalance assists in accelerating the tables, and at the bottom the overbalance assists in stopping them. It is expected that the tables will rise through their 40 in. travel in about 2 sec. On the end of the motor shaft is attached a Cutler-Hammer disk brake, so arranged that as soon as the power is cut off the motor the brake takes hold.

The first design contemplated a weight balance swinging on an arm, so arranged that the leverage of the weight increased as the table fell, but on account of the enormous moving masses it became evident the inertia effect of this large weight, as well as its bulk, would be very objectionable, and it was decided to change to the air hydraulic method.

The billet is delivered to the mill by the entry table, and after the first pass is received on the delivery table in such a position that when the table rises a set of fingers turns it over and transfers it in position for the first top pass. This manipulation is accomplished by the motion of the table through a system of bell cranks and links, and a large weight at the side of the table. These bell cranks might have been connected directly to the foundation instead of to the weight, but the weight is used as a safety device in case any part of the mechanism is caught, in which case the weight will lift free of its support and avoid damage to the tables. The tables now being in the upper position the piece goes through the second pass, and is delivered to the entering table over a set of fingers, supported on the foundation, which turn it as the table falls and transfers it ready for the third pass. This operation is repeated for the fourth and fifth passes, after which the billet is delivered to the shear tables, and on to the succeeding stands of the 28-in. rail mill. The tables do not rise in a straight line, as in the ordinary practice with lifting tables, but in an arc of a circle described by the rocker arms beneath the table.

The bearing pressure used in the entire design was less than 300 lb. per sq. in. In the rock shaft bases are large cavities to receive wooden blocks which act as bumpers in case any of the links break and allow the tables to fall. The table does not strike these bumpers in ordinary action, but clears them by about 2 in.

Each table is driven by a 50-hp. Westinghouse mill type motor, resting on the line shaft and a spring suspension. The overall length of the tables from center to center of end rollers is 74 ft., and the overall width from end to end of the bases is about 30 ft. The tables stand from the bottom of the base to the top of the hand rail about 18 ft., and the total weight of tables and motor, complete, is about 1,500,000 lb.; that of the lifting portion is about 250,000 lb.

#### The 30 by 72 Inch Plate Mill and Tables for LaBelle Iron Works.

The plate mill and tables designed for the La Belle Iron Works, Steubenville, Ohio, are of the usual type, but embody a number of features of interest. The body of the top and bottom rolls is 30 x 72 in., chilled, and the length over all is 10 ft. 11 in. The middle roll is 18 in. in diameter, chilled. The middle roll is raised and low-



ered by hydraulic cylinders placed on the side of the housings, which operate the roll through balance arms, the balance arms being connected by rock shafts and levers for equalizing the lift. The top roll is counterbalanced by means of weights, which are placed outside the roll pit and connected by means of rock shafts and arms. This is done to allow easy access to the weights and a clear scale pit under the rolls. The screwdown is operated by a 50-hp. Westinghouse motor, provided with slip gear and magnetic brake. The screwdown motor operates the screws through worm and wheel. The screws are adjusted relative to each other for alignment of rolls by means of a clutch on the end of the screwdown shaft, which can be disengaged, allowing one screw to be moved independent of the other. The indicator is of the drum type, carried on top of the screw and indicates to 1-1000 in. in plate thickness.

The roll housings are cast steel, and are provided with an idler roller on the entering side, and with rest bars and stripper guides on the delivery side of both bottom and top passes. Horns are provided on the sides of the housings for carrying a sling to facilitate changing the rolls. The intermediate and vibrating spindles are 8 ft. long. The pinion housings and pinions are cast steel, the latter being 25 in. in pitch diameter by about 40 in. face. The roll housings are provided with brackets for holding a piano rest, for turning the rolls in place and when doing this the rolls are driven by a slow motion device.

The mill is served by two tilting tables 28 ft. long. The table rollers are 13 in. in diameter by 2 ft. 6 in. long, with shafts cast in. Outside the bearings on the end of the roller shafts are disks the same diameter as the rollers, and the backs of the miters also have disks the same diameter as the rollers cast on them. This is the method usually adopted in plate mills to get a narrow table placed up near the rolls and at the same time support a plate as wide as the rolls at the edges. Each side shaft is operated by a 50-hp. Westinghouse railroad type motor. The speed of these shafts is equalized by having one roller on each table geared to both line shafts. Instead of pivoting the table on a shaft it is carried on a segmental shoe resting on the pivot base, so as to obtain an exceedingly large bearing surface, the pressure being about 50 lb. per square inch. This separator also carries the motors, which are located about on the center of oscillation of the table. The tables are lifted by a hydraulic cylinder and are counterbalanced by weights.

A unique feature is the connection between the struts which operate the table and the table girders. This consists of a large cast iron ball, carried in a babbitted seat in the table girders. It allows the tables to vibrate without throwing the connection out of alignment and serves as a means of adjusting the elevation of the table. When erected with the mill the tables will have an over-all length of 61 ft. The total weight is about 200,000 lb, and the weight of the mill 550,000 lb.

The twin tubes of the Hudson & Manhattan Railroad Company under the Hudson River between New York and Hoboken were formally opened on Tuesday, February 25, and the Hudson Companies, which constructed the tubes, publicly turned over the property to the operating company. The Governors of New York and New Jersey took part in the opening ceremonies, and President Roosevelt participated by touching a button in the White House, which was electrically connected with the railroad system's power, and so started the first subaqueous train from New York to New Jersey.

The Westinghouse Electric & Mfg. Company, Pittsburgh, has received an order from the Nevada-California Power Company of Goldfield, for two 2000 hp. electric generators and the necessary apparatus required in fitting up a modern power house. The power generated will be used in gold mines of the Goldfield and Tonapah districts.

### Canada Suspends the Iron Ore Royalty.

TORONTO, February 22, 1908.—By an order-in-Council which has just been passed by the Dominion Government the royalty on the product of iron mines held under patent from the Crown is suspended for 20 years. The royalty is itself the creation of an order-in-Council, passed in 1903. In that it is provided that the patent for a mining location on Dominion lands outside of the Yukon Territory shall reserve to the Crown forever a royalty not exceeding 2½ per cent. of the sales of the product of the location. The present order excepts iron from this requirement during the period from the first of January last to the first of January, 1928. In the Provinces of Manitoba, Saskatchewan and Alberta, in the Districts of Ungava, Keewatin, MacKenzie and Franklin, and in the Territory of Yukon the public lands are under the jurisdiction of the Dominion Government, and when they are referred to as "Crown" lands, it is meant that they are subject to that government. Crown lands in other parts of Canada are at the absolute disposal of the Provinces in which they lie. There are certain negligible exceptions to this, such as Indian lands in the Provinces, these being under Dominion control because the Indians on reserves themselves are.

In the vast extent of Canadian territory kept in the control of the Dominion Government tracts variously mineralized have been discovered. Thus, in Alberta, there are extensive coal fields whose resources are being developed, and in regions further north natural gas is known to abound. In Ungava and Keewatin the explorers of the geological survey have found great iron deposits. The expansion of the country's railroad system and the spread of settlement are leading to fresh discoveries and bringing within the zone of enterprise mineral areas that were out of range before. In particular the construction of the Grand Trunk Pacific Railway has opened new fields to the miner. Closely following on the surveys of that transcontinental line came parties of the geological survey. As a matter of fact, long before the railroad was thought of the Survey had collected a great fund of information about the country to be traversed, and by arranging this information in a single volume the government was able to show that there were probably great abundance and variety of raw material throughout the latitude over which it was proposed to build the road. As the time for the completion of the road and for the beginning of its operation approaches, the government probably sees that the royalty would retard the development of iron mines along the line. So far from discouraging the utilization of the country's iron deposits it has been the policy of the government to stimulate the iron industry by bounties and high duties. By waiving the royalty it shows liberality like that of the Ontario Government, which exempts from its mineral tax iron ore that is treated in Canadian furnaces.

In his testimony before a special committee of the Senate last year, A. P. Low, Director of the Geological Survey, said that a belt of iron-bearing rock, probably 100 miles long and from 200 to 300 miles wide, was traced in Ungava, and that, in the future, Labrador peninsula will furnish a large supply of iron ore. These areas are, of course, far from the Grand Trunk Pacific, but that railroad will form a spinal column from which branch lines will be thrown out, like ribs, into the country it passes over. The Ontario Government's Temiskaming & Northern Ontario Railway will eventually reach James Bay, and afford an outlet for ore and other products in the region tributary to Hudson Bay.

C. A. C. J.

Stack No. 2 of the Dunbar Furnace Company, Dunbar, Pa., for 14 consecutive days ending February 22, achieved the low average consumption of 1976 lb. of coke per ton of pig iron, the iron averaging about 2 per cent. silicon and 0.029 sulphur. This furnace uses Dunbar by-product coke, which is made in Semet-Solvay ovens located at the plant.



## PERSONAL.

Archibald Replogle, formerly assistant superintendent of the Cambria Forge Company, Johnstown, Pa., has been made general manager to succeed Frank Trabold, resigned. The company manufactures railroad, automobile and general forgings.

The Massachusetts Fan Company, Watertown, Mass., which has heretofore maintained branch offices in Boston, New York, Pittsburgh and Cleveland, is now extending its representation through the medium of resident engineers. Cuthbert Schaefer, with offices at First National Bank Building, Chicago, and John J. Dwyer, American National Bank Building, St. Paul, will cover the respective territories of which these cities are the natural centers. Both men have already had extended experience in the blower business. They will constitute a material addition to the staff of the company.

W. E. Dodds has resigned as manager of the steam engine department of the Allis-Chalmers Company, Milwaukee, Wis. He had held the position for many years, both under the old Edward P. Allis Company and under the consolidated companies. Before becoming identified with other business interests he will spend some time in travel.

Edward Johnson of Columbus, Ohio, has been elected president of the Lorain Coal & Dock Company, Cleveland, to fill the vacancy caused by the recent death of A. C. Saunders.

Washington A. Roebbing, Trenton, N. J., has been appointed by Governor Fort of New Jersey as one of the managers of the State Geological Survey.

A. C. Dinkey, president of the Carnegie Steel Company, Pittsburgh, has been elected a director in the Mellon National Bank in that city. Wm. H. Donner, formerly president of the Union Steel Company, taken over by the United States Steel Corporation several years ago, has been elected a director in the same bank.

Roland Carlberla of the Chemical Department of Columbia University read a paper on the "Manufacture of Ferrochrome in the Electric Furnace" at the meeting of the Society of Chemical Industry, New York Section, at the Chemists' Club, 108 West Fifty-fifth street, New York, on the evening of February 21.

Morris Bachman, president of the Sharon Steel Hoop Company, Sharon, Pa., has sailed for Europe on a two months' pleasure trip.

Robert P. Bainbridge, assistant superintendent of the Bessemer steel plants of the Carnegie Steel Company, at Mingo Junction and Bellaire, has resigned, effective March 1, on account of ill health.

Major C. D. Rhodes, formerly sales agent of the Lackawanna Steel Company, at Cleveland, Ohio, who has been seriously ill in a New York hospital for several weeks, has been removed to his home at Sharon, Pa.

C. M. Schwab, chairman of the Bethlehem Steel Corporation, and Archibald Johnston, president of the Bethlehem Steel Company, are expected to return from Europe this week.

The Jacobson Machine Mfg. Company, Warren, Pa., has recently established a Southern office at 676 Marietta street, Atlanta, Ga., where it will carry a full stock of its line of gas and gasoline engines and a stock of repair parts. This business will be in charge of C. R. Morrison, who has for some time been the company's traveling representative in the Southern States. This company is one of the concerns engaged in the manufacturing of gas and gasoline engines that has not experienced any slack-up in the orders received nor volume of business done. It reports having laid off no men nor reduced wages, but is running full capacity, with orders booked at present sufficient to keep the plant going at full capacity for nearly two months. The company's Southern trade has been built up at a very rapid rate during the past year.

## OBITUARY.

ERNEST CADY, Hartford, Conn., former Lieutenant-Governor of Connecticut, and one of the founders of the Pratt & Cady Company, died suddenly February 16, aged 65 years. He was a native of Stafford, Conn., and was educated in the public schools and at Worcester Academy, Worcester, Mass. When 16 years old he became a clerk in a store at Stafford, leaving it to serve in the navy. Returning to that town after the Civil War, he conducted a store as a member of the firm of Beebe & Cady. After some further mercantile experience in Norwich he went to Hartford and with R. N. and F. A. Pratt organized the Steam Appliance Company, whose specialties were manufactured for the company by the Pratt & Whitney Company. Four years later the business was reorganized under the name of the Pratt & Cady Company, which has grown to be a large and important establishment, manufacturing valves, hydrants and similar products. Mr. Cady retired from the business 10 years ago. He was a director of the National Machine Company, was for several years president of the Eastern Consolidated Oil Company, and was a trustee of the Society for Savings. He was a member of the Hartford Club. He was elected Lieutenant-Governor of Connecticut in 1892. He leaves one son, Ernest H. Cady.

WILHELM HILDENBRAND, a well-known civil engineer, died in New York City February 21, aged about 63 years. He was born in Germany, received his education at the Karlsruhe Polytechnic and came to America about 1867, his first connection being with the New York Central Railroad. He was long employed on the construction of the Brooklyn Bridge, his name appearing on the bronze tablet on the New York tower of that structure. He built the rack railroad up Pike's Peak, rebuilt the Cincinnati-Covington suspension bridge, without interrupting traffic for more than an hour at any time, and built bridges at Port Jervis, N. Y.; Wheeling, W. Va.; at Dingman's, over the Delaware River; a suspension bridge at Mapimi, Mexico, and the cables for the Williamsburg Bridge over the East River.

ROBERT W. HAMILTON died at Pittsfield, Mass., February 11, aged 82 years. He was perhaps the oldest hydraulic engineer in this country. For a number of years he was a resident of Milwaukee and was the builder of the first pumping engine for the Milwaukee waterworks system, which was a very large compound beam pumping engine installed 34 years ago and which is still in operation. At that time it was one of the largest and best engines of its kind in the country, having a capacity of 16,000,000 gal. a day. For the four years from 1870 to 1874, he was superintendent of the old Edward P. Allis Company plant. He returned to the East and was active in the construction of pumping engines until 15 years ago, when he retired from business. He leaves three sons.

ROBERT H. BRYON, for many years manager of the architectural department of the J. L. Mott Iron Works, New York, died February 21, aged 51 years. He was a native of New York City and designed much of the fancy iron work for the company by which he was employed.

LEWIS H. TAYLOR, founder of the Taylor Iron & Steel Works, died at High Bridge, N. J., February 18, aged 97 years.

JAMES POWELL, president of the Wm. Powell Company, Cincinnati, Ohio, died February 25 at his residence in Avondale. He had been confined to his bed for nearly a year. He was one of the organizers of the National Association of Manufacturers, a founder and former governor of the Manufacturers' Club of Cincinnati, a member of the Queen City Club, a past Grand Master of Odd Fellows, and a leader in Baptist Church circles. He was born in Ghent, Belgium, in 1832, and went to Cincinnati when quite young. He engaged in the general machinery business, building up the Union Brass Works. He leaves one son and two daughters.

The machine shop connected with the Carnegie Technical Schools in Pittsburgh has been equipped with a full line of iron working tools of modern design.

## NEWS OF THE WORKS.

## Iron and Steel.

The blast furnace of the Stewart Iron Company, Ltd., at Sharon, Pa., which has been idle for about three months for re-lining and repairs, has been blown in again.

At present the Cambria Steel Company is operating only three of its eight blast furnaces at Johnstown, Pa.

The Youngstown Sheet & Tube Company, Youngstown, Ohio, has recently received some Government orders of fair size for galvanized sheets and pipe.

Misleading reports have been printed in the daily papers concerning the Woodstock Iron Works Corporation, which was recently incorporated with a capital stock of \$500,000. This new company is simply a change in the organization of the Woodstock Iron & Steel Corporation in order to facilitate the handling of the business, the stockholders in the new company remaining the same as in the old.

John T. Jones, Iron Mountain, Mich., and associates are now constructing a plant under the Jones patents to utilize the low grade ores of the Menominee Range, which are not of commercial value at present. Experimental work, which has been conducted for some time, having proved satisfactory, work was started on a plant which will take four or five months to complete. The furnace is designed to manufacture wrought iron direct from the ore, thus saving one process. If this is successfully accomplished it is claimed it will open a practically unlimited iron ore field, as there are many large deposits of lean ore in both the Menominee and Marquette ranges.

The furnace of the Central Iron & Coal Company at Holt, Ala., has been put in operation after an idleness of three months for repairs.

## General Machinery.

The Lehigh Foundry & Machine Company, Lehigh, Pa., and the Bath Foundry & Machine Company, Bath, Pa., have been combined under the name of the Carbon Foundry & Machine Company, which was recently organized. The two plants will be combined and operated at Bath. L. M. Balliet of Lehigh is president, and Charles I. Berlin of Bath, secretary.

The Chester B. Albee Iron Works, North Side, Pittsburgh, manufacturer of pneumatic machinery, forgings, bridge railings, &c., has shipped one of its 10 ft. 6 in. gap riveters of heavy construction to the Isthmian Canal Commission, at Canal Zone, Panama, and has received a contract for 1125 ft. of its Bridgeport style of bridge railing for the First avenue viaduct of the Chicago, Milwaukee & St. Paul Railroad at Milwaukee, Wis.

The South & Western Railroad shops, which were recently burned in Carnegie, Tenn., will not be rebuilt on the old site. The Johnson City Foundry & Machine Works will be used at present. This property belongs to the South & Western Railroad, but it had been leased to G. W. Sitton. Additional machinery will be installed, and the men who have been unemployed for a few days will soon resume work.

## Power Plant Equipment.

Leo Robinson, Borough Clerk, Mendham, N. J., will receive bids until March 13 for the construction of a water works system.

The Board of Commissioners of Rockingham, N. C., will receive bids until February 27 for building part of the water works plant, water tower, pumping station and reservoir. Bids for the machinery will be asked for later.

The State Board of Agriculture, Indianapolis, Ind., will receive bids for the equipment of an independent electric light plant on the fair grounds.

A special committee has been appointed to secure plans and specifications for a new lighting plant for Richmond, Va.

H. S. Pell, secretary and general manager of the Niles Boiler Company, Niles, Ohio, has been appointed its receiver on petition of W. A. Thomas, president. Trouble in making collections and pressure of certain creditors for payment of their bills are given as the reason for this action. The company manufactures castings, stokers, heavy plate work and boilers.

The American Engine Company reports that the increased business consequent upon the manufacture of its new engines (Angle-Compound) has necessitated a large addition to its plant at Bound Brook, N. J., where even in these quiet times it has for some weeks been running both day and night shifts.

The Louisville Traction Company, Louisville, Ky., is to appropriate \$200,000 for improvements to its power plant and road. This money is to be used to pay for the equipment now being installed, which includes one 3000-kw. Parsons steam turbine, two 500-hp. Babcock & Wilcox boilers with chain grate stokers, one substation to contain three 1000-kw. rotary converters, transformers, switchboard, &c.

## Foundries.

The installation of electric rammers at the plant of the United States Cast Iron Pipe & Foundry Company, at Anniston, Ala., has been completed and all departments are ready for operation. The Bessemer plant has suspended operation and no statement is made as to resumption.

The Sheffield Casting & Mfg. Company, Sheffield, Ala., has resumed operation after a suspension of some months.

The Purcellville Foundry Company, Purcellville, Va., intends to rebuild its foundry as soon as weather will permit, but has not yet prepared plans. The new plant will not require much in the way of equipment, but the company would like to correspond with manufacturers of iron flasks.

A meeting of the stockholders of the Buffalo Crucible Casting Company, Buffalo, N. Y., will be held March 6, for the purpose of voting upon a proposition to dissolve the corporation.

## Fires.

The plant of the Friend Paper Company, West Carrollton, Ohio, was damaged \$25,000 by fire February 19.

The cabinet and chair factory of E. B. Jordan & Co., Brooklyn, N. Y., was burned February 22, the loss being about \$150,000.

The roundhouse and machine shop of the Central New England Railroad, at Fishkill Landing, N. Y., were burned February 13, the loss being about \$50,000.

## Hardware.

The annual meeting of stockholders of the New Castle Forge & Bolt Company, New Castle, Pa., was held last week, at which the following officers were elected: C. J. Kirk, president; E. W. Bendel, vice-president; E. E. Whitaker, treasurer, and Paul McBride, secretary. These officers with E. J. Norman, Martin T. F. Morehead, George Greer, R. C. Patterson and George L. Patterson make up the Board of Directors.

Hubbard & Co., Pittsburgh, manufacturers of shovels, spades, scoops and railroad tools, have received a large contract from the Isthmian Canal Commission for shovels and laborers' tools.

The Steel Car Forge Company, Frick Building, Pittsburgh, an identified interest of the Standard Steel Car Company, and which for several years has confined its product exclusively to the manufacture of car forgings and special forgings, has enlarged its capacity in the past year and is now preparing to fill orders for all sizes of machine and carriage bolts, nuts and rivets.

The Tuthill Spring Company, Chicago, has won out in the strike of its hand fitters which was called December 3 for the purpose of preventing work being done by machines. The strike was called off on February 18 without any concession on the part of the company, which will take the old men back only as needed.

## Miscellaneous.

The Stanford Steel Range Company, Norfolk, Va., incorporated with a capital stock of \$100,000, has completed its plant and is now manufacturing the Stanford patent double oven steel range. The company purchased the foundry of the Pocahontas Iron Works and also the plant of the Sheffield Company and combined the two at Norfolk. Having the complete equipment of both companies, it will need only such machinery as will be necessary to increase the output from time to time. George T. Tilley is president; C. T. Robinson, vice-president, and J. P. Jackson, secretary.

Plans have been completed for a new building, 83 x 108 ft., for the Berger Bros. Company, Philadelphia, Pa.

R. G. Wright & Co., Buffalo, N. Y., sheet iron workers and manufacturers of oil tanks, &c., have purchased a site, 52 x 198 ft., at 128 Swan street, where they will erect a three-story brick factory.

The Flour City Ornamental Iron Works, Minneapolis, Minn., has increased its capital stock to \$250,000. William Burns, who has been associated with the company two years, has been elected vice-president.

Twenty thousand acres of valuable iron ore property in Blount County, Tenn., have been leased by the La Follette Coal, Iron & Railway Company, and that corporation now has a force of men prospecting over the different deposits. The ore will be hauled to the furnace at La Follette.

The S. Kelghley Metal Ceiling & Mfg. Company, Pittsburgh, manufacturer of Kelghley lock-joint metal ceilings, has received an order for 200 squares of this ceiling for two barrack buildings at Fort Niagara, N. Y. The company has recently completed the Calahan warehouse, at Youngstown, Ohio, calling for 400 squares; also a convent school at St. Marys, Pa., with 150 squares of lock-joint ceilings.

The Union Radiator Company, general offices and works at Johnstown, Pa., and manufacturer of Concord radiators, has recently added to its plant a new assembling room, 50 x 110 ft., which is equipped with complete hydraulic testing apparatus for use in assembling and testing its radiators before shipping. This new addition increases the assembling capacity about 20,000 ft. of radiation per day. This company is arranging to manufacture a line of single and five-column plain patterns of radiators, made in all heights, together with a new slip nipple wall radiator made in four heights, both plain and ornamental. To make room for these new lines of product the company will build a new addition to its foundry, in which new machinery and appliances will be installed. These additions will give an increased foundry capacity of about 2500 sq. ft. of radiation per day.



## The Iron and Metal Trades

Rail business has come out in an encouraging way in the past week. The Great Northern has placed 20,000 tons with the United States Steel Corporation, 15,000 tons with the Lackawanna Steel Company and 10,000 tons with the Pennsylvania Steel Company. A minor portion of the tonnage is Open Hearth Rails. The Pennsylvania Steel Company has taken the Atlantic Coast Line's order for 8000 tons to be rolled at Sparrows' Point, and the Ontario & Western has bought 3100 tons from the Lackawanna Steel Company. In addition, two Eastern mills have booked considerable tonnage, the greater part of it being Open Hearth Rails.

Generally speaking, finished lines apart from Rails give a better account of themselves this week. The Steel trade suffered more acutely than the Pig Iron trade in the October collapse, and now the conditions as to relative activity are reversed.

The United States Steel Corporation, from operating only 28 per cent. of its rolling capacity just following the panic, has now come up to 51 per cent. Its officers have reckoned on practically a 50 per cent. average in the first half of the year and an advance in the second half to, say, 75 per cent. While few of the Steel companies have yet reached 50 per cent., there has been an increase in working forces at a number of mills in the past week. It is yet difficult to measure how much more this means than the working off of accumulated orders, though naturally spring business should soon add some momentum. Railroad financing will have much to do in determining the market of the next few months.

The lighter finished lines still lead in activity, but in Structural Material February makes a better showing than January. The current bookings of fabricating plants represent from 25 to 30 per cent. of capacity. For the Beaver River bridge of the Pittsburgh & Lake Erie Railroad, 8000 tons, bids will soon be taken, and the 16,000 tons of Steel for the approach to the Manhattan Bridge is about to be let. In New York City, a 2000-ton contract was let for a new theatre, while a number of railroad bridge contracts, varying from 250 to 1400 tons, have been taken. In the East three vessels are being figured on that will require 5000 to 6000 tons of Plates and Shapes.

Reports of lower prices on Steel Billets in the Pittsburgh District seem to be based on recent conversion arrangements, made possible by the now considerable spread between Bessemer Pig Iron and the usual market price for Steel. In the Chicago District competition over a 500-ton order for Forging Billets brought out a variation of \$2 a ton in bids.

Manufacturers of Forgings are meeting in New York this week, and steps may be taken to check the demoralization which has appeared in that market lately.

The Foundry Pig Iron trade is practically at a standstill. What further tonnage the Pipe makers have picked up has been largely cheap Southern Iron, reports of cutting in that section still coming out. The fact that practically all stocks at merchant furnaces are sold does not signify, with the melt of Foundry Iron ranging from 20 to 50 per cent. of last year's average. A pending sale of 2000 tons of Malleable Pig Iron in Ohio brought out prices around \$16.50. An inquiry is up for 10,000 tons of Basic Iron for St. Louis, and there is another for 5000 tons, besides several for 1000 tons.

The Copper market has shown more activity this week and lower prices, 12½c. having been reached on buying for both domestic and foreign account.

## A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,  
Declines in Italics.

At date, one week, one month and one year previous.

	Feb. 26, 1908.	Feb. 19, 1908.	Jan. 22, 1908.	Feb. 27, 1907.
<b>PIG IRON, Per Gross Ton:</b>				
Foundry No. 2, Standard, Philadelphia .....	\$18.25	\$18.25	\$18.25	\$25.50
Foundry No. 2, Southern, Cincinnati .....	15.75	15.75	16.00	26.00
Foundry No. 2, Local, Chicago ..	17.50	17.75	18.00	25.50
Bessemer, Pittsburgh .....	17.90	17.90	18.90	22.85
Gray Forge, Pittsburgh .....	15.90	15.90	16.15	21.85
Lake Superior Charcoal, Chicago ..	21.50	21.50*	22.00	27.00

\* The price of \$21 printed last week was a typographical error.

<b>BILLETS, &amp;c., Per Gross Ton:</b>				
Bessemer Billets, Pittsburgh ..	28.00	28.00	28.00	29.50
Forging Billets, Pittsburgh .....	30.00	30.00	30.00	36.00
Open Hearth Billets, Phila. ....	30.40	30.40	30.00	33.00
Wire Rods, Chicago .....	35.00	35.00	35.00	37.00
Steel Rails, Heavy, Eastern Mill ..	28.00	28.00	28.00	28.00

<b>OLD MATERIAL, Per Gross Ton:</b>				
Steel Rails, Melting, Chicago ..	13.00	13.00	12.25	18.00
Steel Rails, Melting, Phila. ....	14.50	15.00	12.00	19.50
Iron Rails, Chicago .....	17.00	17.00	16.00	25.00
Iron Rails, Philadelphia .....	18.00	18.00	16.50	27.00
Car Wheels, Chicago .....	15.75	15.00	19.00	23.00
Car Wheels, Philadelphia .....	16.00	16.50	17.00	23.25
Heavy Steel Scrap, Pittsburgh ..	13.75	13.75	12.50	18.00
Heavy Steel Scrap, Chicago .....	12.50	12.50	11.00	15.50
Heavy Steel Scrap, Phila. ....	14.50	15.00	12.00	19.00

### FINISHED IRON AND STEEL,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Refined Iron Bars, Philadelphia ..	1.65	1.65	1.47	1.93½
Common Iron Bars, Chicago .....	1.65	1.65	1.55	1.81½
Common Iron Bars, Pittsburgh ..	1.50	1.50	1.40	1.80
Steel Bars, Tidewater, New York ..	1.76	1.76	1.76	1.74½
Steel Bars, Pittsburgh .....	1.60	1.60	1.60	1.60
Tank Plates, Tidewater, New York ..	1.86	1.86	1.86	1.84½
Tank Plates, Pittsburgh .....	1.70	1.70	1.70	1.70
Beams, Tidewater, New York .....	1.86	1.86	1.86	1.84½
Beams, Pittsburgh .....	1.70	1.70	1.70	1.70
Angles, Tidewater, New York .....	1.86	1.86	1.86	1.84½
Angles, Pittsburgh .....	1.70	1.70	1.70	1.70
Skelp, Grooved Steel, Pittsburgh ..	1.70	1.70	1.70	1.85
Skelp, Sheared Steel, Pittsburgh ..	1.80	1.80	1.80	1.95

### SHEETS, NAILS AND WIRE,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, No. 27, Pittsburgh .....	2.40	2.40	2.40	2.50
Wire Nails, Pittsburgh .....	2.05	2.05	2.05	2.00
Cut Nails, Pittsburgh .....	2.00	2.00	2.00	2.05
Barb Wire, Galv., Pittsburgh .....	2.50	2.50	2.50	2.45

<b>METALS, Per Pound:</b>				
Lake Copper, New York .....	12.62½	12.87½	14.00	25.12½
Electrolytic Copper, New York ..	12.50	12.62½	14.00	24.87½
Spelter, New York .....	4.75	4.75	4.70	7.00
Spelter, St. Louis .....	4.75	4.80	4.55	6.77½
Lead, New York .....	3.75	3.75	3.75	6.35
Lead, St. Louis .....	3.65	3.65	3.60	6.10
Tin, New York .....	28.70	28.15	27.60	41.90
Antimony, Hallett, New York .....	9.00	9.00	9.00	24.50
Nickel, New York .....	45.00	45.00	45.00	45.00
Tin Plate, 100 lb., New York .....	\$3.89	\$3.89	\$3.89	\$4.09

## Chicago.

FISHER BUILDING, February 26, 1908.—(By Telegraph.)

The occasional spurts of improvement that appear from week to week in the various departments of finished material can hardly be taken as indicative of a permanent quickening in the general pulse of trade, nor on the other hand are the intervening periods of moderate reaction significant of permanent recession. The fact, therefore, that business in mill products has shown a sagging tendency for the past few days is not of material importance touching general conditions. Business as a whole for the current month will probably show a gain over January, but is moving forward very slowly in all lines. Prices in the main are being adhered to with reasonable regularity on finished and semifinished material, though recent developments indicate that the regular schedule on Billets is not being uniformly maintained by all producers. The feature of the week in market transactions was the placing of 10,000 tons of Standard Section Rails by the Great Northern Railroad, the tonnage being equally divided between Bessemer and Open Hearth material. The remainder of the 50,000 tons comprising this road's requirements will probably be awarded in the near future. Only a small amount of Structural Material was secured by fabricators during the week. Railroad bridge work continues to supply the principal tonnage included in such contracts. Only a very moderate amount of new business in Plates, Bars and Merchant Pipe is coming out. Both jobbers and consumers are limiting purchases to actual present requirements. The Pig Iron market is extremely quiet. Notwithstanding the sharp reduction in output, nearly every

merchant furnace in operation is piling the greater part of its product.

**Pig Iron.**—Not only has the tonnage sold within the past week been extremely light, but inquiries of a positive nature are few, the largest reported being less than 1000 tons. Prices on Southern Iron have settled pretty uniformly to \$13, Birmingham, for No. 2 Foundry, for such business as is being offered. It is probable that this figure might be shaded if tempting tonnage was offered, though a number of the leading interests insist that their extreme limit is \$13. There has been a gradual narrowing of the spread between Northern and Southern Iron, until now they are very nearly at a parity. Quotations on Northern No. 2 Foundry are this week reduced to \$17.50, Chicago, which is practically in agreement with the basis of \$17, plus switching charges suggested at the recent meeting of Northern furnacemen at Cleveland. It is evident that consumers are placing orders only for such tonnage as is required to cover casting contracts in hand and are not disposed to provide for anticipated wants. Conditions on either side of the market have developed no noteworthy change either as to present demand or future outlook. The following prices are for February and March delivery, f.o.b. Chicago:

Lake Superior Charcoal.....	\$21.50 to \$22.00
Northern Coke Foundry, No. 1.....	18.00 to 18.50
Northern Coke Foundry, No. 2.....	17.50 to 18.00
Northern Coke Foundry, No. 3.....	17.00 to 17.50
Northern Scotch, No. 1.....	18.50 to 19.00
Northern Coke, No. 1.....	17.85 to 18.35
Southern Coke, No. 2.....	17.35 to 17.85
Southern Coke, No. 3.....	16.85 to 17.35
Southern Coke, No. 4.....	16.35 to 16.85
Southern Coke, No. 1 Soft.....	17.85 to 18.35
Southern Coke, No. 2 Soft.....	17.35 to 17.85
Southern Gray Forge.....	15.35 to 15.85
Southern Mottled.....	15.10 to 15.60
Malleable Bessemer.....	17.50 to 18.00
Standard Bessemer.....	19.40 to 19.90
Jackson Co. and Kentucky Silvery, 6 %	20.40 to 20.90
Jackson Co. and Kentucky Silvery, 8 %	22.40 to 22.90
Jackson Co. and Kentucky Silvery, 10 %	24.40 to 24.90

(By Mail.)

**Billets and Rods.**—Orders for Forging Billets are being restricted to small lots, which are also few in number. Recent negotiations have developed the fact that a strict maintenance of the official price schedule is not being closely observed by all producers. Regular prices, which are reported as being firmly maintained by the principal producers, are quoted at \$33 to \$34, Chicago, for Forging Billets. No sales of considerable tonnage of Wire Rods have developed, and prices are being evenly held at the following quotations: Bessemer, \$35; Basic, \$36; Chain, \$37, all at Pittsburgh.

**Rails and Track Supplies.**—A transaction, of significant importance at this time, is comprised in an order for 10,000 tons of Rails placed last week by the Great Northern Railroad with the Pennsylvania Steel Company. This is the first installment of the 60,000 tons on which this road has been negotiating for prices during the past few weeks. Specifications for the 10,000 tons placed call for 5000 tons of Bessemer Rails, which will be rolled by the Maryland mills and 5000 tons of Open Hearth, which will be furnished by the Steelton plant of the Pennsylvania Steel Company. The 1200 tons of High T Section Rails taken two weeks ago by the Pennsylvania Steel Company for the Twin City Traction Company, St. Paul and Minneapolis, were also Open Hearth Rails. Orders for Track Supplies continue to be of small volume, and there is but little doing in Light Rails, the prices of which show a good deal of unevenness; cuts of \$3 to \$4 a ton are not infrequent, being induced largely by competition from the Re-rolling mills. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.65c.; car lots, 1.75c. to 1.85c.; Spikes, 1.90c. to 2c., according to delivery; Track Bolts, 2.40c. to 2.50c., base, Square Nuts, and 2.55c. to 2.65c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., \$28; 20-lb., \$29; 16-lb., \$30; 12-lb., \$31. Standard Sections, \$28, f.o.b. mill, full freight to destination.

**Structural Material.**—The business of the past week shows very little improvement in the amount of tonnage booked by fabricators, or in orders and specifications received by the mills. If maintained at its present average throughout the month, the business taken by the American Bridge Company for February will aggregate about one-third of its capacity. Most of the tonnage offered continues to come from the railroads in the form of bridge material. Last week's totals, which were very light, include 500 tons placed by the Chicago, Milwaukee & St. Paul Railroad, for four spans over the Missoula River, taken by the Worden-Allen Company, Milwaukee, Wis., and 500 tons for a draw-bridge placed by the same road; also 500 tons for a viaduct at Topeka, the general contract for which was taken by the A. N. Blodgett Construction Company, Kansas City. Very little tonnage is forthcoming from building structure projects, there being no closures reported this week including tonnage of notable size. Prices from store are quoted without change at 2.05c. to 2.10c., and mill prices at Chicago are as follows:

Beams and Channels, 3 to 15 in., inclusive, 1.88c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.88c.; larger than 6 in. on one or both legs, 1.98c.; Beams, larger than 15 in., 1.98c.; Zees, 3 in. and over, 1.88c.; Tees, 3 in. and over, 1.93c., in addition to the usual extras.

**Plates.**—The demand continues sluggish, and is very closely confined to small orders, for prompt shipment. Emergency jobs calling for small quantities of material constitute the bulk of requirements arising in boiler shops; and other Plate users, such as car shops, are running light, and ordering sparingly. A fair amount of pick-up business is being supplied by the jobbers from warehouse stocks. Prices on narrow Plates continue to be cut to the extent of from \$1 to \$2 per ton by a few of the smaller mills. We quote, for shipment from mill, as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.88c. to 2.08c.; 3-16 in., 1.98c. to 2.18c.; Nos. 7 and 8 gauge, 2.03c. to 2.23c.; No. 9, 2.13c. to 2.33c.; Flange quality, in widths up to 100 in., 1.98c. to 2.08c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.98c. to 2.18c.; Flange quality, 2.08c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2.10c. to 2.20c.; from 72 to 96 in. wide, 2.20c. to 2.30c.; 3-16 in. up to 60 in. wide, 2.20c. to 2.35c.; 72 in. wide, 2.40c. to 2.50c.; No. 8 up to 60 in. wide, 2.20c. to 2.25c.; Flange and Head quality, \$0.25c. extra.

**Sheets.**—There is not much gain to be reported in the amount of new business offered, but, at the same time, the market seems to be safely holding its own. The demand for the heavier gauges of Black Sheets from store is moderately good, and inquiries of an encouraging nature are coming to the mills for Galvanized and Light Sheets for roofing. We are advised that prices both from mill and store are being well maintained. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 to 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88c.; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c. Black Sheets from store: Blue Annealed, No. 10, 2.20c.; No. 12, 2.25c.; No. 14, 2.30c.; No. 16, 2.40c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bar Iron.**—Specifications against contract sales of Bar Iron made prior to the late advance show a slight improvement, but are not sufficient to keep the mills engaged at anything like full capacity. Very little new business is developing for either Iron or Steel Bars, and a great part of the rolling capacity of Western mills is this week idle. The 8 in., 9 in. and 21 in. mills of the Illinois Steel Company's Bay View plant were started to-day to turn out what orders are on hand. Quotations, Chicago, are as follows: Steel Bars, 1.78c., with half extras; Iron Bars, 1.65c.; Hoops, 2.18c., extras as per Hoop card; Bands, 1.78c., as per Bar card, half extras; Soft Steel Angles and Shapes, 1.88c., half extras. Store prices are as follows: Bar Iron, 2.10c. to 2.25c.; Steel Bars, 2c. to 2.10c.; Steel Bands, 2c., as per Bar card, half extras; Soft Steel Hoops, 2.35c. to 2.45c., full extras.

**Merchant Pipe.**—The margin of improvement in the volume of new business is not significantly large, but at the same time each week's tonnage shows a little gain over the preceding one. The consumption is naturally restricted to a considerable extent by unfavorable weather conditions, and a better movement in Tubular goods is looked for with the coming of open weather. The cutting of prices by jobbers on shipments from store stocks continue to be an unsatisfactory feature of this trade. Mill quotations are reported to be firmly held on Steel Pipe, but there is more or less irregularity in Iron Pipe. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 71.2; 7 to 12 in., 68.2; Galvanized, ¾ to 6 in., 61.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 72 to 72½ per cent. on Black Steel Pipe, ¾ to 6 in. About four points advance above these prices is asked for Iron Pipe.

**Boiler Tubes.**—There is no buying of consequence for forward requirement, and orders for current needs, though perhaps somewhat greater in number, are usually for small lots. Very few shipments are being made directly from the mills, most of the wants in Merchant Tubes being supplied from store stocks. While in the main prices are fairly well maintained, some unevenness is reported. Mill quotations for future delivery, on the base sizes, are as follows: 2½ to 5 in., in carload lots, Steel Tubes, 63.2; Iron, 50.2; Seamless, 49.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:



	Steel.	Iron.	Seamless.
1 to 1½ in.....	35	35	35
1½ to 2¼ in.....	50	35	35
2¼ in.....	52½	35	35
2½ to 5 in.....	60	47½	47½
6 in. and larger.....	50	35	..

**Merchant Steel.**—Quietness continues to characterize the movement of Tire sizes and miscellaneous Shapes. Specifications from implement makers and manufacturers are increasing very slowly, while the demand from jobbers includes only filling in orders. Shafting discounts are still unsettled and irregular and recognized quotations are being liberally shaded. Quotations are as follows: Planished or Smooth Finished Tire Steel, 1.98c.; Iron Finish up to 1½ x ½ in., 1.93c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.78c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.28c., and 1½ in. and larger, 2.18c.; Smooth Finished Machinery Steel, 2.18c.; Flat Sleigh Shoe, 1.93c.; Concave and Convex Sleigh Shoe, 2.08c.; Cutter Shoe, 2.46½c.; Toe Calk Steel, 2.33c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Shafting, 54 per cent. off in car lots; 48 per cent., less than car lots, base territory delivery.

**Cast Iron Pipe.**—Included in last week's lettings were 2650 tons awarded by the city of Detroit to the American Car & Foundry Company, and 700 tons let by the city of South Bend, Ind., were taken by the American Cast Iron Pipe & Foundry Company. Among the lettings now in sight which will come up for closure in the near future are 300 tons, readvertised by Rockford, Ill., and 200 tons by Elyria, Ohio. Routine orders for the incidental requirements of maintenance are coming in more liberally, and the prices offered in recent competitive bids show a tendency toward greater firmness. We quote, per net ton, Chicago, as follows: Water Pipe, 4-in., \$30; 6 to 12 in., \$29; 16-in. and up, \$28, with \$1 extra for Gas Pipe.

**Old Material.**—The transfers of tonnage for the past week have been too few and unimportant to furnish a clear criterion as to price levels. Neither dealers nor consumers are active buyers, and something near akin to a deadlock has resulted from the indifference which characterizes both sides of the market. With no extensive stocks ahead the mills are buying very conservatively, taking only such lots as can be picked up at a bargain. Dealers, on the other hand, are not disposed to let go of their holdings at sacrifice prices, and in consequence there is often a wide spread between the prices asked by the seller and offered by the buyer. On a round lot of high grade Relaying Rails, now in the market subject to close inspection, offers range from \$19.50 to \$21.50 without acceptance as yet. The market was not called upon to absorb any railroad material last week, but the Burlington Railroad is this week offering a list of 3740 tons, 2350 tons of which is Iron Scrap.

Old Iron Rails.....	\$17.00 to \$17.50
Old Steel Rails, rerolling.....	13.00 to 13.50
Old Steel Rails, less than 3 ft.....	13.00 to 13.50
Relaying Rails, standard sections, subject to inspection.....	22.00 to 23.00
Old Car Wheels.....	15.75 to 16.25
Heavy Melting Steel Scrap.....	12.50 to 13.00
Frogs, Switches and Guards, cut apart.....	12.25 to 12.75
Mixed Steel.....	9.50 to 10.00

The following quotations are per net ton:

Iron Fish Plates.....	\$15.00 to \$15.50
Iron Car Axles.....	17.00 to 17.50
Steel Car Axles.....	15.50 to 16.00
No. 1 Railroad Wrought.....	12.50 to 13.00
No. 2 Railroad Wrought.....	11.50 to 12.00
Railway Springs.....	11.50 to 12.00
Locomotive Tires, smooth.....	15.00 to 15.50
No. 1 Dealers' Forge.....	9.75 to 10.25
Mixed Bushelling.....	8.00 to 8.50
Iron Axle Turnings.....	7.00 to 7.50
Soft Steel Axle Turnings.....	7.00 to 7.50
Machine Shop Turnings.....	7.00 to 7.50
Cast Borings.....	5.00 to 5.50
Mixed Borings, &c.....	5.00 to 5.50
No. 1 Mill.....	7.50 to 8.00
No. 2 Mill.....	6.50 to 7.00
No. 1 Boilers, cut to Sheets and Rings.....	7.50 to 8.00
No. 1 Cast Scrap.....	13.00 to 13.50
Stove Plate and Light Cast Scrap.....	11.25 to 11.75
Railroad Malleable.....	11.25 to 11.75
Agricultural Malleable.....	10.50 to 11.00
Pipes and Flues.....	9.00 to 9.50

**Metals.**—Copper holds fairly even as to price, and several carload sales have helped to strengthen a healthy demand. As a rule, however, consumers are not anticipating their wants, but are satisfied to buy small lots as the need arises. Old Metals are extremely quiet, and on some grades slightly lower. We quote as follows: Casting Copper, 13¼c.; Lake, 14 to 14¼c., in car lots for prompt shipment; small lots, ¼c. to ¾c. higher; Pig Tin, car lots, 32c.; small lots, 31½c.; Lead, Desilverized, 4c. to 4.05c., for 50-ton lots; Corroding, 5.15c. to 5.25c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 5c.; Cookson's Antimony, 13c., and other grades, 11c. to 11½c.; Sheet Zinc is \$7 list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 13c.; Heavy Copper, 13¼c.; Copper Bottoms, 11c.; Copper Clips, 11c.; Red Brass, 12¼c.; Yellow Brass, 10½c.; Light Brass, 6¼c.; Lead Pipe, 3¼c.; Zinc, 3¼c.; Pewter, No. 1, 21c.; Tin Foil, 23c.; Block Tin Pipe, 25c.

## Pittsburgh.

PARK BUILDING, February 26, 1908.—(By Telegraph.)

**Pig Iron.**—Some inquiries are in the market for fair sized lots of Bessemer, Basic and Foundry Iron, but the ideas of furnacemen and consumers on prices are far apart, and nothing has been done. Only small lots of Pig Iron, for prompt shipment, are being sold, and we note sales as follows: One hundred tons of chill cast Bessemer Iron at \$18; 125 tons of standard Bessemer at \$17, 100 tons at \$17, and 100 tons at \$16.90; about 200 tons of Northern No. 2 Foundry at \$15.85 to \$16; 1000 tons of Basic at \$15.90, and about 75 tons of Northern Forge at \$15, all at Valley furnace. We quote Standard Bessemer Iron at \$17, Basic at \$15.90 to \$16, Northern No. 2 Foundry at \$16, and Northern Forge at \$15, all at Valley furnace.

**Steel.**—The market on Steel is being disturbed to some extent by the fact that several contracts have recently been made between Pig Iron dealers and Steel works by which the dealers put Bessemer and Basic Iron into the Steel plants, and have it turned into Blooms and Billets on a conversion deal. The Steel is then sold in the open market at \$1 to \$2 less than regular prices. However, very little of this has been done, and a full range of sizes cannot be furnished. Regular prices on Bessemer and Open Hearth Billets remain at \$28, Forging Billets \$30, while Sheet and Tin Bars under the recent readjustment in prices are now \$29.50 for Pittsburgh, Sharon, Steubenville and other nearby points of delivery.

(By Mail.)

General conditions in the Steel trade are showing slight betterment in some directions, but the improvement is slow and probably will be for some time. Some of the Steel plants in the Pittsburgh District are running a little better, the leading companies operating to about 50 per cent. of their Ingot capacity. The Steel plant of the Youngstown Sheet & Tube Company is off this week, but is scheduled to start Sunday night, March 1. The Edgar Thomson Rail mills, Nos. 1 and 2, were down last week, and are idle this week, but will be started next Sunday night. Pig Iron inquiries continue to be for small lots for early shipment, and while there is some inquiry for deliveries as far ahead as June, very little, if any, actual tonnage has been closed, the ideas of buyers and sellers being wide apart. Some consumers of Pig Iron have the idea that they can buy metal at practically their own prices, but when they send out inquiries they usually find that furnaces either refuse to quote or else ask higher prices than such buyers are willing to pay. Bessemer Iron continues to be offered in small lots for prompt delivery at \$17, Valley furnace, or a shade under, while the official price of Northern No. 2 Foundry is \$17, delivered in the Pittsburgh District, with a 25c. switching charge. Northern Forge Iron can be bought readily at \$15, Valley furnace, or \$15.90, Pittsburgh, but we do not hear of any tonnage being sold. A readjustment has been made in prices of Sheet Bars for delivery in the Pittsburgh and adjacent districts, the price of \$29.50, delivered, having been fixed by four of the leading Steel mills for Pittsburgh, Youngstown, Canonsburg, Martins Ferry, Niles, Sharon, Steubenville, Wheeling, Washington, McKeesport and Canton delivery. Practically all of the Sheet and Tin Plate mills that buy Sheet Bars in the open market are located in the above cities, and it was at the request of several mills located near local Steel mills that could deliver Sheet Bars on a switching charge of 15c., who objected to paying the \$1 freight from Pittsburgh to the valleys that the change was made. The new price means an advance in Sheet Bars of 50c. a ton to consumers in the Pittsburgh District. In Finished Iron and Steel conditions are very quiet, with not much probability of early improvement. The bulk of the movement in Finished Products at present is in Tin Plate, Tubular Goods and Wire Products, the demand for which at present is fairly active. Current reports of cutting in prices on Steel Billets probably emanate from the fact that three or four Steel plants have recently made conversion deals with dealers in Pig Iron, by which they take in Bessemer or Basic Iron at a certain price, and then roll this into Billets, which are sold in the open market at \$2 to \$3 a ton under the regular price. One local mill recently took a contract for 1000 tons of 6 x 6 in. Blooms, running high in carbon and manganese, which were furnished to the buyer at less than the regular price. The low prices ruling for Basic and Bessemer Iron, and the wide spread between these prices and the official prices on Steel, make it possible for dealers to arrange such contracts with Steel mills that have capacity for rolling certain sizes of Billets. There is a fair movement of material in the Scrap market, but Coke continues dull and neglected and prices are low.

**Ferromanganese.**—The market is rather dull, and prices are weak. Prime grades of foreign 80 per cent. Ferro are freely offered at \$45, Baltimore, or \$46.95, Pittsburgh, and possibly on a large tonnage for extended delivery this price might be shaded. Small lots are sold at \$47 to \$47.50, Pittsburgh.

**Skelp.**—There is no inquiry, and the Skelp mills are very short of work. Prices are weak, but in the absence of actual sales we continue to quote nominally as follows: Grooved Steel Skelp, 1.60c.; Sheared Steel Skelp, 1.70c.; Grooved Iron Skelp, 1.80c., and Sheared Iron Skelp, 1.90c., f.o.b. Pittsburgh.

**Muck Bar.**—The market is dull and neglected, and we quote best grades of Muck Bar, nominally, at \$27.50 to \$28, Pittsburgh. We have not heard of any actual sales in this district for some time.

**Rods.**—The leading producer continues to quote Bessemer Rods at \$35, Open Hearth \$36, and Chain Rods \$37, f.o.b. Pittsburgh. Little new tonnage is being offered, with the exception of Chain Rods, for which there is a fair demand.

**Steel Rails.**—The Edgar Thomson Rail mills, Nos. 1 and 2 of the Carnegie Steel Company, which were down last week, and are still idle this week, are scheduled to start on Sunday night, March 1. The Isthmian Canal Commission is in the market for 2500 tons of 70-lb. Rails, bids for which will close on March 16. The Cumberland & Pennsylvania, a coal railroad, has placed 500 tons of Standard Sections with the Carnegie Steel Company. While negotiations are still on with some of the leading roads, no actual tonnage has been placed, but some business is expected in the near future. It is not believed that new Rail tonnage this year will exceed 1,500,000 tons, and it may be somewhat less. Some export inquiries are in the market, but are not far enough along to refer to definitely. Very low prices continue to be made by mills that re-roll Rails, Light Sections having been sold as low as \$23 to \$24, at mill. We are advised that one of the mills located in Central Ohio, and which re-rolls Rails, has recently advanced its prices \$1 to \$2 a ton, depending on Sections. Regular prices on Light Rails, which are still being shaded \$3 to \$4 a ton by the mills re-rolling Rails, are as follows: 25 to 45 lb. Sections, \$28; 20-lb., \$29; 16-lb., \$30, and 12-lb., \$32. We quote Standard Sections at \$28, at mill, and Angle Splice Bars at 1.65c., at mill.

**Plates.**—Orders are only for small lots for actual needs, the market being bare of any large tonnage. Latest reports indicate that at present there are about 345,000 idle freight cars in the country, and this slack will have to be taken up and a demand for more cars come before the railroads are likely to place any orders for cars. Indications are that the Plate trade will be dull for the next two or three months. None of the Plate mills is operating to more than 50 per cent. of capacity, if that. Some shading in prices is being done on Plates, but not enough tonnage is coming up to test the market seriously. We quote: Tank Plates, ¼-in. thick, 6¼ in. up to 100 in. wide, 1.70c., base, at mills, Pittsburgh. Extras over this price are as follows:

	Extra per 100 lb.
Gauges lighter than ¼-in. to and including 3-16-in.	
Plates on thin edges.....	\$0.10
Gauges Nos. 7 and 8.....	.15
Gauge No. 9.....	.25
Plates over 100 to 110 in.....	.05
Plates over 110 to 115 in.....	.10
Plates over 115 to 120 in.....	.15
Plates over 120 to 125 in.....	.25
Plates over 125 to 130 in.....	.50
Plates over 130 in.....	1.00
All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.).....	.10
Complete Circles.....	.20
Roller and Flange Steel Plates.....	.10
"A. B. M. A." and ordinary Firebox Steel Plates.....	.20
Still Bottom Steel.....	.30
Marine Steel.....	.40
Shell grade of steel is abandoned.	

**TERMS.**—Net cash 30 days. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes, 14 in. wide down to 6 in. of Tank, Ship or Bridge quality.

**Structural Material.**—Some work has been closed up recently, and inquiries are reported as a little better. The American Bridge Company has taken 1500 tons for the Clarke avenue crossing at Cleveland, placed jointly by the Baltimore & Ohio and the city; also 500 tons of bridge work for the Chicago & Northwestern. So far this month the American Bridge Company has taken about 20,000 tons of Steel, a much better record than in January. The McClintic-Marshall Construction Company has taken 1400 tons of bridge work for the Chicago & Northwestern, which includes 46 spans of deck plate girders; 500 tons of bridge work for an Eastern railroad, and 2500 tons of bridge work for the Chicago, Milwaukee & St. Paul. The Pittsburgh & Lake Erie Railroad has prepared plans for its new Steel bridge at Beaver, Pa., involving about 8000 tons, and bids on this work will be asked for in a short time. We quote: Beams and Channels, up to 15 in., 1.70c.; over 15 in., 1.80c.; Angles, 3 x 2 x ¼ in. thick, up to 6 x 6 in., 1.70c.; 8 x 8 and 7 x 3½ in., 1.80c.; Zees, 3 in. and larger, 1.70c.; Tees, 3 in. and larger, 1.75c.; Bulb Angles and Deck Beams, 2c. Under the Steel Bar card Angles, Channels and Tees under 3 in. are 1.70c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

**Sheets.**—Mills report a slight increase in the demand

for Black Sheets, while new tonnage in Galvanized is fairly heavy. The American Sheet & Tin Plate Company and some of the other Sheet makers are slowly increasing their active Sheet capacity. Prices on the whole are being maintained, but in some cases slight concessions are made by the mills, absorbing part of the freight to points of delivery. Regular prices are as follows: We quote: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c. No. 28 Painted Roofing Sheets, \$1.75 per square, and Galvanized Roofing Sheets, No. 28, \$3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Bars.**—Only a moderate amount of tonnage is being placed in Iron and Steel Bars, orders being mostly for small lots and actual needs. Practically all the mills rolling Iron and Steel Bars are operating on only about half time or less, while specifications against contracts are coming in rather slowly. We quote Iron Bars at 1.50c. for the Pittsburgh District, and 1.47c., Pittsburgh, for Chicago and points further West. Steel Bars remain very firm, at 1.60c., Pittsburgh.

**Tin Plate.**—There is a moderate increase in new business in both Bright and Roofing Plates, and, as a result, the American Sheet & Tin Plate Company is now operating 165 of its 242 Tin mills. The American Works at Elwood, Ind., containing 12 Tin mills, was started last week. Some of the independent Tin Plate concerns are operating nearly full, while others are running to about half capacity. We are advised that regular prices are being firmly maintained. We quote at \$3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Spelter.**—The demand is rather light, but prices are fairly strong, and we quote prime grades of Western Spelter at 4.70c. to 4.72½c., East St. Louis, equal to 4.82½c. and 4.85c., Pittsburgh.

**Hoops and Bands.**—Specifications against contracts placed by consumers early in January are coming in at a fairly satisfactory rate, but no new business of any moment is being placed. We quote Steel Hoops at \$2, base, full Hoop card extras; Steel Bands, \$1.60, base, half Steel card extras, all f.o.b. cars, Pittsburgh, Pa., in carload lots, for delivery during 1908.

**Railroad Spikes.**—The demand continues light, the railroads being practically out of the market as buyers. We continue to quote standard sizes of Steel Railroad Spikes at \$1.80 to \$1.85, but this price is shaded slightly to meet competition in Iron Spikes. Prices on smaller sizes are fairly firm, on the basis of \$1.95 to \$2 per 100 lb., f.o.b. Pittsburgh.

**Merchant Steel.**—The volume of new business is small, and concessions in prices offered by the mills do not stimulate buying. Prices on Shafting continue to be shaded from 5 to 10 per cent., carload lots being offered at 55 and 2½ per cent. off the list. We quote, nominally, as follows: Smooth Finished Machinery Steel, 1.85c. to 2c., depending on quality; Flat Sleigh Shoe, 1.65c. to 1.75c.; Cutter Shoe, 2.15c. to 2.20c.; Toe Calk Steel, 2.10c. to 2.15c.; Railroad Spring Steel, 1.75c. to 1.80c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades, and 10c. and upward for special grades.

**Merchant Pipe.**—A moderate amount of new business is being placed, but it still represents actual needs of consumers, and is only for small lots. The Pipe mills as a whole are operating to possibly 50 per cent. of capacity, and it is a question whether a reduction in prices would stimulate buying. Products of the Pipe mills are not affected seriously by lack of buying on the part of railroads, and it would seem that the demand for Pipe should be better than it is. Consumers are buying only for actual needs. Net discounts on Steel Pipe to the large trade on ¾ to 6 in. remain at 74 and 5 per cent. off list, while on Iron Pipe the absolute minimum is 72 and 5 per cent. Discounts on Steel Pipe are as follows:

	Merchant Pipe.	
	Jobbers, carloads.	Steel.
	Black.	Galv.
¾ to 1 in.....	65	49
1 in.....	67	53
1½ in.....	69	57
2 to 6 in.....	73	63
7 to 12 in.....	70	65
Extra strong, plain ends:		
¾ to 1 in.....	58	46
1 to 4 in.....	65	53
4½ to 8 in.....	61	49
Double extra strong, plain ends:		
¾ to 8 in.....	54	43



The new discounts on Genuine Iron Pipe are as follows:

	Black.	Galv.
1/8 and 1/4 in.....	63	51
3/8 in.....	65	55
1/2 in.....	67	61
3/4 to 6 in.....	71	61
7 to 12 in.....	68	53
Extra strong, plain ends:		
1/8 to 3/8 in.....	56	44
1/2 to 4 in.....	63	51
3/4 to 8 in.....	59	47
Double extra strong, plain ends:		
1/8 to 8 in.....	52	41

**Boiler Tubes.**—The demand is only fair and is confined to small orders for actual needs. The railroads are not buying Boiler Tubes to any extent, and the demand from this source will likely be dull for some time. Prices continue to be shaded more or less. Discounts on Merchant Tubes for small lots, on which an extra 5 per cent. is allowed in carloads, are as follows:

#### Boiler Tubes.

	Iron.	Steel.
1 to 1 1/4 in.....	42	47
1 1/4 to 2 1/4 in.....	42	59
2 1/4 in.....	47	61
2 1/2 to 5 in.....	52	65
6 to 13 in.....	42	59
2 1/2 in. and smaller, over 18 ft. long, 10 per cent. net extra.		
2 1/2 in. and larger, over 22 ft. long, 10 per cent. net extra.		

**Iron and Steel Scrap.**—A leading consumer of Steel Scrap, out of the market for some time as a buyer, has recently bought a round tonnage, while another Steel interest is said to be quietly in the market for 3000 to 4000 tons of Scrap, which it expects to close this week. The tone of the Scrap market is firm, and more material is moving than for some time, one concern reporting that its shipments of Scrap so far this month have been in excess of both December and January. Dealers quote about as follows: Heavy Steel Scrap for Pittsburgh, Steubenville or Sharon delivery, \$13.75 to \$14; No. 1 Cast Scrap, \$15.25 to \$15.50; Low Phosphorus Melting Stock, \$17.50 to \$18; Bundled Sheet Scrap, \$10 to \$10.25; No. 1 Busheling Scrap, \$13 to \$13.25; No. 2, \$10.50 to \$10.75; Cast Iron Borings, \$8 to \$8.50. Rerolling Rails are \$14.50 to \$15; Steel Axles, \$16 to \$16.25; Old Steel Rails, short pieces for Open Hearth use, \$13.75 to \$14; Sheet Bar Crop Ends, \$17 to \$17.50; Steel Axles, \$16 to \$16.25; Iron Axles, \$20 to \$20.50, and Grate Bars, \$13 to \$13.25. We note sales as follows: 100 tons of Old Car Wheels at \$16; 100 tons of Low Phosphorus Scrap at \$16.90, delivered at Sharon, Pa.; 100 tons of Machine Shop Turnings at \$9.25, Valley delivery; 100 tons of Railroad Wrought Scrap at \$17, and 100 tons of Locomotive Tires, smooth, at about \$17.50, Pittsburgh; 300 tons of Sheet Bar Crop Ends at about \$17, Pittsburgh, and 1000 tons of Heavy Steel Scrap at \$14, Pittsburgh.

**Coke.**—New demand for both Furnace and Foundry Coke is very quiet, and prices do not show any betterment. A Cleveland furnace interest has bought four cars of Furnace Coke per day for March delivery on the basis of \$1.70 at oven. Strictly Connellsville Furnace Coke for spot delivery is still held at \$1.80 to \$1.85, while other outside grades are \$1.70 to \$1.75 at oven. Connellsville 72-hr. Foundry Coke is held at \$2.25 to \$2.40 at oven, while outside makes are quoted at somewhat lower prices.

## Birmingham.

BIRMINGHAM, ALA., February 24, 1908.

**Pig Iron.**—Sales recorded during the week aggregate a comparatively small tonnage, but the total of sales for the month is believed to be in excess of that for three months past, and producers are apparently satisfied, general conditions considered. Inquiries are more numerous, and the activity noted in the Cast Iron Pipe market is encouraging. Requests have recently been made by leading Pipe interests for quotations on approximately 5000 tons, and indications favor further developments in this line. The demand for prompt deliveries of Pig Iron, although the tonnage engaged is usually limited, is steady, and resumption of shipments against old contracts is frequently reported. Notwithstanding the fact that the change in base of Northern quotations is indicative of a reduction in price of Southern grades, such an effect has not resulted, and the schedule of \$13.50, f.o.b. Birmingham, is being adhered to. Numerous reports are rife as to cutting, \$12.50 to \$13 having been mentioned as representative of such prices, but the details of any transactions at figures under \$13.50 are so meager that a statement to that effect is not warranted. A lot of 400 tons of Gray Forge for delivery covering the second quarter has sold for \$11.50, Birmingham, which indicates a reduction, but the concern making the sale adheres to \$13.50 for No. 2, and, it is believed, would not make a greater differential than 50c. per ton on this basis other than for Gray Forge. The sale of 200 tons of higher grades is reported at \$13.50, Birmingham, and High Silicon Iron has recently brought a premium. Production has been further increased during the week, and 13 merchant furnaces are now in operation in the State. Out of seven Basic furnaces, five are in blast.

**Cast Iron Pipe.**—Among the new lettings now in sight the most significant are 3000 tons Gas Pipe for the city of Washington, D. C., and 3000 tons Water Pipe for Victoria, B. C. Prices are still unsettled, and developments in the Pig Iron market are being awaited with interest. It is understood that the lowest figures for years have recently been reached as the result of sharp competition for Water Pipe contracts. We quote nominally as follows for Water Pipe, per net ton, f.o.b. cars here: 4 to 6 in., \$28; 8 to 12 in., \$26; over 12 in., average \$25, with \$1 per ton extra for Gas Pipe. On large municipal contracts these prices are probably shaded.

**Old Material.**—The condition of the market is unchanged despite the increase in consumption. Inquiries are more numerous, but the demand continues to be met with carload lots and purchasers are still indisposed to negotiate for advanced deliveries. Dealers are conservative as to stock accumulations, and, like consumers, are interested only in bargain lots. Prices are at variance, but the business reported does not warrant a revision of quotations, and we quote nominally as follows, per gross ton, f.o.b. cars here:

Old Iron Rails.....	\$18.00 to \$18.50
Old Iron Axles.....	16.50 to 17.00
Old Steel Axles.....	13.50 to 16.00
Old Car Wheels.....	18.50 to 19.00
No. 1 Railroad Wrought.....	13.50 to 14.00
No. 2 Railroad Wrought.....	10.50 to 11.00
No. 1 Country Wrought.....	12.50 to 13.00
No. 2 Country Wrought.....	10.50 to 11.00
Wrought Pipe and Flues.....	10.50 to 11.00
Railroad Malleable.....	12.50 to 13.00
No. 1 Steel.....	12.00 to 12.50
No. 1 Machinery Cast.....	10.50 to 11.00
Stove Plate and Light Cast.....	9.50 to 10.00
Cast Borings.....	6.00 to 6.50

## Philadelphia.

PHILADELPHIA, PA., February 25, 1908.

There has been a slow, gradual improvement in some branches of the trade. Small gains in production have been made in certain cases, while others have been just able to hold their own, which is considered by some as a favorable condition, inasmuch as it shows that there has been no retrograde movement. Under existing conditions it is expected that the rate of improvement will be moderate, at least until consumers begin to take on new business more rapidly than they have recently been doing. The railroads, which are a most important factor in the Iron and Steel trades, are still out of the market, and until they, together with the larger industrial concerns, become more active buyers, business will no doubt continue somewhat sluggish. Locomotive builders, machine tool manufacturers and Iron and Steel foundries, who are dependent to a large extent, both directly and indirectly on the railroad business, feel the falling off in that demand very severely and until they begin to pick up orders, they will not be very extensive buyers of crude or finished materials.

**Pig Iron.**—Buying continues on a moderate scale, consumers maintaining their policy to purchase only enough Iron to meet their immediate requirements. That stocks in buyers' yards are low, however, is evidenced by the desire for prompt shipment that usually accompanies orders. On the whole, however, the aggregate tonnage is considered very fair under existing conditions, and it was brought out at the monthly meeting of the Eastern Pennsylvania Pig Iron Association last week that orders for the current month are about equal to those of the previous one; that there is no increase in the tonnage of Pig Iron on the furnace banks, and that prices for the various grades of Pig Iron are being fully maintained by the members of the association and other leading interests. Producers, therefore, are pretty well satisfied with the situation and express a belief that there will be a moderate increase in buying in the near future. Sales continue to be largely restricted to the Foundry grade. The individual tonnages taken are as a rule small, by far the greater proportion being of lots less than 100 tons. Occasionally a sale of several hundred tons is made, but they are not numerous. Prices continue unchanged, \$18.25 to \$18.50, delivered, being the range for No. 2 X Foundry. Pipe foundries continue to take small lots of Pipe-making Irons, and one interest is reported to have made a further purchase of 1000 tons of Southern Iron. Outside interests are not believed to be making any extensive sales, the slight concession in prices not being considered sufficient inducement by some melters to change from the brands of Iron they have been accustomed to use. Forge Irons have been in light demand. Scattered sales of small lots are reported at the established figures, \$16.50 to \$16.75, delivered, mostly for prompt shipment. Mills are not actively engaged, and their requirements are therefore not heavy. There is practically no demand for Steel-making Irons. Steel makers are still covered for some time ahead as far as their requirements for Basic Iron are concerned, and no new business has developed during the past week for Low Phosphorus Pig. Prices on all grades of Iron are being firmly held at the established figures by the leading producers. Prospective buyers have felt the market in a number of instances, but

meet with no success in their efforts to get lower figures. We quote for early delivery in buyers' yards, eastern Pennsylvania and nearby territory, the following range of prices:

No. 2 X Foundry.....	\$18.25 to \$18.50
No. 2 Plain.....	17.75 to 18.00
No. 3 Foundry.....	17.25 to 17.50
Gray Forge.....	16.50 to 16.75
Basic.....	17.25
Low Phosphorus.....	24.00 to 25.00

**Ferromanganese.**—There has been a little more demand for Ferro, and a few scattered sales of 50 and 100 ton lots, for prompt shipment, have been made. Prices range from \$45 to \$47, Baltimore, although probably less could be done for round tonnages, for which, however, there is practically no demand at the time.

**Steel.**—Some little improvement is to be noted in the demand for Steel. Orders have been booked for small lots ranging from 50 to 100 tons, while there has been some feeling of the market for larger tonnages. Efforts have been made to break the present price, but, so far as we can learn, this has not been done in this territory. Quotations for local delivery are being maintained at \$30.40 for ordinary Rolling Steel, with Forging Steel at \$32.40 to \$33.40, according to analysis.

**Plates.**—There has not been much change in the demand. Orders come out irregularly, but on the average make a pretty fair tonnage. One order covering nearly 1000 tons of Plates was booked by one of the Eastern mills. As a rule, however, purchases run more in the neighborhood of 100 tons. Quite a little Bridge Material has been taken recently, as has also a small amount of Locomotive Steel. Mills continue to operate at between 50 and 60 per cent., but business is largely for early delivery. Prices are being fully maintained, quotations for delivery in this territory ranging as follows:

	Part Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel.....	1.85	1.90
Flange or Boiler Steel.....	1.95	2.05
Commercial Firebox.....	2.05	2.10
Marine.....	2.25	2.30
Locomotive Firebox Steel.....	2.35	2.40
The above are base prices for ¼-in. and heavier. ing extras apply:		
3-16-in. thick.....		\$0.10
Nos. 7 and 8, B. W. G.....		.15
No. 9, B. W. G.....		.25
Plates over 100 to 110 in.....		.05
Plates over 110 to 115 in.....		.10
Plates over 115 to 120 in.....		.15
Plates over 120 to 125 in.....		.25
Plates over 125 to 130 in.....		.50
Plates over 130 in.....		1.00

**Structural Material.**—A fair volume of business continues to come out. The demand, however, is mainly for small and miscellaneous lots. Several smaller building propositions and a few bridges of the smaller class have been before the trade, and some of this work is expected to develop into orders in the near future. Mills have in some cases made slight gains in production, and Structural Material makers, on the whole, feel more encouraged by the outlook. Prices continue unchanged, 1.85c. to 2c. being quoted, according to specifications.

**Sheets.**—Mills have gained slightly in tonnage, but the business placed has been made up almost entirely of small lots for early delivery. Buyers still withhold orders for future delivery, preferring under existing circumstances to cover their needs only as fast as they book new business. Prices continued to be firmly maintained, quotations being as follows for mill shipments, with a tenth extra for small lots: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.70c.; Nos. 25 to 26, 2.80c.; No. 27, 2.90c.; No. 28, 3c.

**Bars.**—The situation in the Bar Iron market shows but little variation. Buying has been on a very moderate scale and has been confined almost entirely to consumers' requirements for immediate use. Rolling mills are not fully occupied, and continue in most instances to run irregularly. Prices of Refined Iron Bars are being pretty firmly maintained at the new base, 1.65c., delivered in Philadelphia and adjoining territory.

**Coke.**—The demand for all grades of Coke has been quiet. Sales continue small, and are largely for prompt delivery, at unchanged prices. Furnace Coke continues to be quoted at \$1.75 to \$2.25, at oven, while Foundry Coke ranges from \$2.25 to \$2.75, at oven. We quote the following range of prices, for delivery in the Philadelphia territory:

Connellsville Furnace Coke.....	\$4.00 to \$4.50
Foundry Coke.....	4.50 to 5.00
Mountain Furnace Coke.....	3.70 to 4.10
Foundry Coke.....	4.10 to 4.60

**Old Material.**—The market is in a rather unsettled condition. Buyers' and sellers' ideas differ materially as to the prices of some grades of Scrap. Steel melters as a rule are not willing to pay over \$13.50 for Heavy Melting Steel, and would no doubt take a fair tonnage at those figures, but dealers in this territory hold firmly at \$14.50 to \$15, at which latter figures sales of small tonnages have been made for early delivery. One thousand tons of Low Phosphorus

Scrap was sold during the week at 50c. above last week's quotation. Rolling mills continue to take small tonnages of No. 1 Wrought Iron Scrap at full prices. We quote, for prompt delivery in buyers' yards, eastern Pennsylvania and adjoining territory the following range of prices:

No. 1 Steel Scrap and Crops.....	\$14.50 to \$15.50
Low Phosphorus.....	18.50 to 19.00
Old Steel Axles.....	18.00 to 18.50
Old Iron Axles.....	23.00 to 24.00
Old Iron Rails.....	18.00 to 19.00
Old Car Wheels.....	16.00 to 17.00
Choice No. 1 R. R. Wrought.....	16.50 to 17.00
Machinery Cast.....	15.00 to 15.50
Wrought Iron Pipe.....	12.00 to 12.50
No. 1 Forge Fire Scrap.....	11.50 to 12.00
No. 2 Light Iron.....	9.00 to 10.00
Wrought Turnings.....	10.00 to 10.50
Stove Plate.....	13.00 to 13.50
Cast Borings.....	8.50 to 9.00
Grate Bars.....	12.00 to 13.00

## Cincinnati.

CINCINNATI, OHIO, February 26, 1908.—(By Telegraph.)

There is no disposition manifested to force buying in any of the various branches of the Iron and Steel industry by ill advised cutting of prices, so far as can be ascertained in this field, and there is consequently little going in actual transactions. Some fairly good sized contracts for Coke extending over the year suggest improvement in the melt, and there have been some rush orders for Foundry Cokes in small lots for prompt shipment which indicates that the foundries have about exhausted supplies on yards. Confidence in the future is the best asset in evidence at the plants of the Old Material dealers, aside from their tremendous stocks. Prices in some few lines of Scrap have stiffened a little, but in the main there is not enough doing to establish a market. While not much is heard from the Stove manufacturers since the early year, when some heavy purchases were made of Iron, salesmen and dealers in territory contiguous to the South all report good prospects, and the belief is general that the Stove makers will see little difference in their output.

**Pig Iron.**—A characteristic of the present market seems to be the movement in small lots, contracting for any forward period being a rarity, and showing unmistakably the feeling of uncertainty that exists among the larger manufacturers. There has been some buying on the part of Pipe makers, but the impression prevails that negotiations have been conducted under cover and direct with furnaces that had accumulations of stocks in yard, and who were tempted to move them at slightly shaded figures. The new basing prices recently inaugurated for the use of furnaces in the Northern districts are giving salesmen considerable trouble, it is thought, and the general opinion seems to be that they are not as effective as expected. Competition has been very keen in recent negotiations, and it is not generally believed that the basing price of \$17 has been very closely observed. A sale which is expected to be closed to-day on about 2000 tons of Malleable for second and third quarter delivery to a central Ohio manufacturer has been very closely contested, and it is said the price is around \$16.50. A Detroit melter asks for bids on 500 tons of Standard Foundry. Other Michigan concerns want lots of from 300 to 500 tons for prompt delivery. A Kentucky stove concern wants 500 tons of Stove-making Irons, and there is some inquiry for Bessemer from Steel-making concerns. Reports of a sale of 500 tons of Southern No. 2 Foundry as low as \$12.25, Birmingham, are persistent, but this is probably an Iron high in sulphur. There seems to be a little irregularity in the prices on 8 per cent. Silicon, quotations ranging from \$18 to \$20, although a case in point where an Ohio Silvery brand was under consideration analyzed between 7 and 8 per cent. the furnace refused a price of \$18.30. Low grades have furnished some food for argument during the week, and rumors are heard of some No. 4 Foundry and Forge going as low as \$11 and \$10.50, respectively. So far as can be ascertained, the makers of standard brands in the Birmingham District are maintaining the agreed price of \$13.50, and the full range for the balance of the first and up to the beginning of the third quarter is \$13 to \$13.50. For immediate delivery and balance of first half we quote as follows, freight rates being \$3.25, \$1.80 and \$1.20 from the Birmingham, Valley and Hanging Rock districts, respectively.

Southern Coke, No. 1.....	\$16.25 to \$16.75
Southern Coke, No. 2.....	15.75 to 16.25
Southern Coke, No. 3.....	15.25 to 15.75
Southern Coke, No. 4.....	14.75 to 15.25
Southern Coke, No. 1 Soft.....	16.25 to 16.75
Southern Coke, No. 2 Soft.....	15.75 to 16.25
Southern Coke, Gray Forge.....	14.25 to 14.75
Southern Coke, Mottled.....	13.75 to 14.25
Ohio Silvery, 8 per cent. Silicon.....	20.20 to 20.70
Lake Superior Coke, No. 1.....	17.70 to 18.20
Lake Superior Coke, No. 2.....	17.20 to 17.70
Lake Superior Coke, No. 3.....	16.70 to 17.20
Standard Southern Car Wheel.....	25.25 to 25.75
Lake Superior Car Wheel.....	23.50 to 24.00

(By Mail.)

**Coke.**—Deliveries are still progressing on contracts made last year, and at a higher figure, but mostly on requirements,



which are not large at this time; and the continued inactivity of furnaces and foundries makes the future beyond July 1 extremely problematical. There is some spot Coke going at about an average of \$2.40, at oven, for Connellsville and standard Virginia grades. Agencies are willing to contract at \$2.50, covering requirements for the balance of the year. There is considerable uncertainty about Furnace brands. The spot price for best grades is about \$1.90 to \$2.15, at oven. Best Virginia grades of Foundry Coke range from \$2.25 to \$2.50; Furnace, \$1.75 to \$2.15, at oven.

**Finished Iron and Steel.**—Prices are being well maintained at stores. Such business as is coming out is still of the hand to mouth order, and there appears no reason to believe that any immediate improvement is at hand. Dealers quote, f.o.b. Cincinnati, as follows: Iron Bars, carload lots, 1.65c., with half extras; small lots from store, 1.90c., base, one-half extras. Steel Bars, carload lots, 1.75c., base, half extras; small lots from store, 1.90c., base, half extras. Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c. Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c. Plates, 1/4-in. and heavier, carload lots, 1.85c.; small lots from store, 2.10c. Blue Annealed Sheets (heavy), No. 16, carload lots, 2.15c.; small lots from store, 2.50c. No. 14, carload lots, 2.05c.; small lots from store, 2.40c. No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.25c. No. 12, carload lots, 2c.; small lots from store, 2.35c. Sheets (light), Black, No. 28, carload lots, 2.65c. Galvanized Sheets, No. 28, carload lots, 3.70c. Steel Tire, 4-in. and heavier, carload lots, 1.95c., base. Plates, 3-16, and No. 8, carload lots, 2c.; small lots from store, 2.25c.

**Old Material.**—The larger dealers still denominate the situation a "buyer's market," and deny that there is any suggestion of prices stiffening here, as in some other localities. There is no activity in any line of Scrap; the mills are not buying, and negotiations between dealers are not considered as having any weight in making prices. The market here is about as follows, prices being f.o.b. Cincinnati:

No. 1 Railroad Wrought, net ton.....	\$11.00 to \$12.00
Cast Borings, net ton.....	4.50 to 5.00
Steel Turnings, net ton.....	5.00 to 6.00
No. 1 Cast Scrap, net ton.....	12.00 to 13.00
Burnt Cast and Wrought, net ton.....	8.00 to 9.00
Old Iron Axles, net ton.....	15.00 to 16.00
Old Iron Rails, gross ton.....	14.00 to 15.00
Old Steel Rails, long, gross ton.....	11.50 to 12.50
Relaying Rails 56 lb. and up, gross ton.....	22.00 to 23.00
Old Car Wheels, gross ton.....	15.00 to 16.00
Low Phosphorus Scrap, gross ton.....	13.50 to 14.50

## Cleveland.

CLEVELAND, OHIO, February 25, 1908.

**Iron Ore.**—The only development of importance has been quite an increase in orders for shipment of Ore from the docks to the furnaces. Some of the orders result from the starting up of two or three merchant stacks that have been idle for some time. There are no inquiries coming in for 1908 Ore, and none is expected for some time. There are few furnace interests that will not have enough 1907 Ore to last them until late in the summer. Under the circumstances Ore firms are making no efforts to make sales. Operations on the Ore ranges are going on at about the same rate as in the early part of the winter. The output at most of the mines has been reduced to about 60 per cent. of what was being mined during the winter a year ago. Practically no chartering of vessel tonnage for the coming season has been done yet by shippers. The opening of navigation will doubtless be later than usual, and vessel men are looking for a rather light season. We quote Ore prices as follows, at Lake Erie docks, for 1908 delivery, per gross ton: Old Range Bessemer, \$5; Mesaba Bessemer, \$4.75; Old Range Non-Bessemer, \$4.25; Mesaba Non-Bessemer, \$4; Siliceous Bessemer, \$2.75; Siliceous Non-Bessemer, \$2.35 to \$2.60.

**Pig Iron.**—The market continues lifeless. A limited tonnage of Northern Foundry Iron has been sold at \$17, at furnace, for No. 2 Foundry, for delivery in the territory of the selling furnace, the price fixed in the recent agreement being adhered to. That consumers have been willing to place orders on the price basis encourages furnace interests to believe that the agreement will hold, but the buying and the inquiries have been so light that the new arrangement has not yet been given much of a test. There are a few small inquiries out, the largest being for 300 tons. The sale of 350 tons of No. 2 Foundry at \$17, Toledo furnace, is reported, and a local furnace reports the sales of some small lots at \$16.50 and \$16.75, at western Pennsylvania and New York furnaces. While some furnaces report no improvement in shipping orders one local furnace is shipping about 25 per cent. more Iron than a month ago. Little local demand is expected for Foundry Iron before April, as the majority of local consumers have enough Iron coming on old contracts to last them for several weeks. In addition to an inquiry for 10,000 tons of Basic Iron from St. Louis noted last week there is another inquiry from the same territory for 5000 tons, and several other inquiries for 1000 ton lots of Basic Iron. A Dayton concern that has an inquiry out for 2000 tons of Malleable Iron will probably close a con-

tract early this week. There is but little inquiry for Southern Iron. One more furnace will be added to the idle stacks in northern Ohio. Furnace B of Pickands, Mather & Co., Toledo, will go out of blast in a day or two. This furnace has been on Malleable Iron for several months, with the exception of about two weeks past, when it has been producing Foundry Iron. For the first quarter and first half we quote, delivered, Cleveland:

Bessemer .....	\$16.90
Northern Foundry, No. 1.....	17.85
Northern Foundry, No. 2.....	17.35
Northern Foundry, No. 3.....	16.85
Southern Foundry, No. 3.....	\$16.85 to 17.35
Gray Forge.....	15.90 to 16.40

**Coke.**—The market is quiet and prices continue low. There is some demand for Foundry Coke in small lots, but no sales of Furnace Coke are reported. We quote Connellsville Furnace Coke for spot shipment at \$1.85, at oven. There are reports, however, of considerably lower prices. Quotations on Connellsville 72-hr. Foundry Coke range from \$2.25 to \$2.60, sales being reported at \$2.40.

**Finished Iron and Steel.**—Buying is limited to small lots for immediate shipment. Consumers want delivery on current orders as quickly as possible. While there are a large number of these small orders, the aggregate quantity is light. The tonnage sold in the present month will show some increase, perhaps 25 per cent., over any month since October. Some shipments on specifications that were given last fall and were later held up are now being ordered. Practically no new contracts are being placed. Local Bar Iron mills continue to run on about half time. The Plate situation shows no improvement, there being practically no inquiry. The price is being shaded \$2 a ton by some of the smaller Plate mills. The demand for Sheets is almost as light as for Plates, and the price is being shaded. The price of Steel Bars is being firmly maintained, but there are rumors of cutting in Iron Bars. Billets are firm, and there is some demand in car lots for Forging and Re-rolling Billets. We quote the former at \$30, and the latter at \$28, Pittsburgh. One or two mills report some fairly good specifications for Structural Material from Structural shops and Bridge companies. Specifications were received during the week for 700 tons of material for a bridge at Morgantown, W. Va. There are three or four inquiries in the market, aggregating about 1500 tons, for Light Rails for coal mines. The leading interest that has been shading the price to meet the competition of re-rolling mills is now holding firmly to \$28 for 25 to 45 lb. sections. A slight reduction has been made in the previously established price of Bolts and Nuts. The old price was not adhered to, and the new price is slightly higher than the price at which many of the manufacturers have recently been taking orders. The demand for Bolts and Nuts shows some improvement. Some good sized specifications for Plates and Structural Material are being received from the lake shipbuilders. We quote Iron Bars at 1.60c., Cleveland; Steel Bars, 1.70c., Cleveland, for carload lots, half extras; Beams and Channels, 1.80c., base, Cleveland, and Plates, 1/4-in. and heavier, 1.80c., base, Cleveland. We quote Sheets, mill shipments, carload lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. We quote Steel Bars from warehouse at 1.80c., and Iron Bars at 1.80c. Beams and Channels out of stock are 2.10c. to 2.15c., base. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.85c. Warehouse prices on Boiler Tubes, 2 1/4 to 5 in., are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 67 per cent. discount.

**Old Material.**—About the only activity is the trading between dealers which is only in limited volume. Consumers are taking little Scrap, buying only what they need for immediate use. In spite of the fact that the market shows no improvement there is somewhat of a better feeling among dealers. Prices remain about stationary. Quotations are still mainly nominal, but there is no indication of further weakness. There is no indication of an early increase in the demand from mills in this territory. The only railroad list out this week is about 500 tons to be sold by the Nickel Plate. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

Old Steel Rails.....	\$11.50 to \$12.00
Old Iron Rails.....	16.00 to 17.00
Steel Car Axles.....	17.00 to 18.00
Old Car Wheels.....	16.00 to 17.00
Relaying Rails, 50 lb. and over.....	22.00 to 23.00
Heavy Melting Steel.....	12.00 to 12.50
Railroad Malleable.....	12.00 to 13.00
Agricultural Malleable.....	11.00 to 12.00
Light Bundled Sheet Scrap.....	8.00 to 9.00

The following quotations are per net ton, f.o.b. Cleveland:

Iron Car Axles.....	\$16.00 to \$16.50
Cast Borings.....	5.00 to 5.50
Iron and Steel Turnings and Drillings.....	7.00 to 8.00
Steel Axle Turnings.....	7.50 to 8.00
No. 1 Busheling.....	11.00 to 12.00
No. 1 Railroad Wrought.....	12.50 to 13.00
No. 1 Cast.....	12.00 to 13.00
Stove Plate.....	10.50 to 11.00
Bundled Tin Scrap.....	8.00 to 9.00

## Metal Market.

NEW YORK, February 26, 1908.

**Pig Tin.**—Business during the week ending February 22 was good; it was, in fact, by far the best week in the Tin trade since the October panic. Although higher prices came from London, these were brought about by the good demand from consumers here; that is, the incentive for the advance came from the good American buying. This week, however, business has dwindled to small proportions, possibly because of rapid advance in prices, but more probably because the needs of consumers have been satisfied. It is estimated that between 800 and 1000 tons of Tin were sold during the week. Shipments from London were obtainable at concessions of from 10 to 35 points below daily prices, which ranged as follows:

	Cents.
February 19.....	28.20
February 20.....	28.45
February 21.....	29.20
February 24.....	29.10
February 25.....	28.90
February 26.....	28.70

It will probably be necessary again to revise estimates of deliveries into consumption. At present, however, there is a wide difference of opinion regarding deliveries, some placing them as low as 2000 tons, while others think that possibly 2500 tons may be nearer the correct figure. Should the latter guess prove correct, it will leave stocks at the end of the month the smallest in years, for arrivals amount to but 1922 tons so far, and there are afloat 2212 tons, of which but a small amount will make this month's delivery. The London market closes easier, at £128 15s., for spot, and £128 5s. for futures.

**Copper.**—The low level of prices in the present movement was reached on Wednesday and Thursday of last week, when a leading selling interest sold some metal to domestic dealers and foreign speculators at prices around 12.25c. Wall Street reports to the contrary notwithstanding, the tonnage disposed of was not as large as 60,000,000 to 80,000,000 lb., nor was the price 13c. Quotations are largely nominal, producers asking 13c. for Lake and Electrolytic, but consumers are unwilling to bid higher than a range of 12.50c. to 12.75c. for Electrolytic and 12.50c. to 12.87½c. for Lake. Lake is more nearly on a parity with Electrolytic than for several years, because foreign consumers absolutely refuse to pay premiums for this kind of Copper, and there is too little buying from domestic melters to make a market. In fact, at present the price is more or less of a secondary consideration with producers who are more concerned in getting rid of the metal than of getting ¼c. or ½c. more per pound. There continues to be considerable cutting of prices abroad, due to the stocks held by second hands, which were purchased low down. Exports have picked up considerably during the week, amounting to 18,532 tons so far this month, but even at this rate the accumulation of metal here is not being reduced. The London market closes at £58 12s. 6d. for spot and £58 for futures. Best Selected is held at £62.

**Ferroalloys.**—The market continues dull. Prices are largely nominal, \$85 being asked for 50 per cent. Ferrosilicon, and \$47.50 to \$48.50 for 80 per cent. Ferromanganese.

**Pig Lead.**—Some rumors of price cutting are current, but it is difficult to confirm these. The general market is dull and unchanged, 3.75c. being asked in New York. The St. Louis market is unchanged, at 3.65c. Prices in London continue to decline, and another new low record has been set this week, at £13 17s. 6d.

**Spelter.**—A single carload of Spelter was sold on Tuesday at 4.70c. While such a small lot does not make the market, it shows that the continual cutting under producers' quotations is bound to have some effect. The general asking price for Prime Western brands is 4.75c. to 4.80c., both in New York and St. Louis.

**Antimony.**—The market is unchanged; continuing very dull with prices nominal. Cookson's is held at 9.50c., Hallett's at 9c. and outside brands at 8.50c.

**Nickel.**—Prices are without change at 45c. for ton lots and 50c. to 60c. for small quantities.

**Old Metals.**—The demand for Old Metals from dealers is fair; in fact, some classes of Scrap are rather scarce. Dealers' selling prices are practically unchanged from those of a week ago, as follows:

	Cents.
Copper, Heavy Cut and Crucible.....	12.25 to 12.50
Copper, Heavy and Wire.....	11.75 to 12.00
Copper, Heavy and Bottoms.....	11.00 to 11.25
Brass, Heavy.....	9.50 to 9.75
Brass, Light.....	7.00 to 7.50
Heavy Machine Composition.....	11.50 to 12.00
Clean Brass Turnings.....	8.00 to 8.50
Composition Turnings.....	9.50 to 10.50
Lead, Heavy.....	3.60
Lead, Tea.....	3.35
Zinc Scrap.....	3.50

**Tin Plate.**—The Tin Plate trade continues to be the bright spot. Further improvement has been noted this week in the starting up of idle mills, and the demand at present

probably exceeds 50 per cent. of the producing capacity. Prices are unchanged at \$3.89, f.o.b. New York, and \$3.70, f.o.b. Pittsburgh, for 100 lb. IC Coke Plates. Welsh Tin Plates are 1½d. lower, at 12s. in Swansea.

## New York.

NEW YORK, February 26, 1908.

**Pig Iron.**—Southern furnaces seem to have taken most of the small business lately offered, where consumers were located at or near seaboard, so as to take advantage of the lower prices quoted from that section. Foundries farther inland have, for the most part, supplied their limited needs with their customary Eastern brands at the prices recently maintained for such Irons. Demand is very light. We quote, at tidewater, as follows: No. 1 Northern Foundry, \$18.75 to \$19; No. 2 Foundry, \$17.75 to \$18.50; No. 2 Plain, \$17.25 to \$17.75; Gray Forge, \$16.75 to \$17.25. Southern Irons are \$17.50 to \$18 for No. 1 Foundry, and \$17 to \$17.50 for No. 2 Foundry.

**Steel Rails.**—An active Rail market has developed in the past week, gauging activity by present standards. The Great Northern Railroad has placed 45,000 tons of the 60,000 tons on which it has figured recently for 1908—the Steel Corporation taking 20,000 tons, the Lackawanna Steel Company 15,000 tons, and the Pennsylvania Steel Company 10,000 tons. Of the last named contract 5000 tons is Open Hearth Rails. The Ontario & Western has ordered 3100 tons, which will be rolled at Buffalo, and the Atlantic Coast Line 8000 tons, to be rolled at Sparrow's Point.

**Structural Material.**—The American Bridge Company has taken the largest local contract of the week—2000 tons, for the new theater to occupy the block bounded by Sixty-second and Sixty-third streets, Broadway, and Central Park West. The Pennsylvania Railroad has contracted for 250 tons of bridge work, and the Erie has taken a small tonnage. The Steel for the Manhattan Bridge approach, 16,000 tons, is likely to be let soon by the general contractor, J. C. Rodgers, after a long delay by the city in closing for this work. Financial considerations promise to be a controlling factor in Structural operations for some time. We quote as follows on mill shipments, tidewater deliveries: Beams, Channels, Angles and Zees, 1.86c.; Tees, 1.91c. On Beams, 18 to 24 in., and Angles over 6 in., the extra is 0.10c. Material cut to length is sold from stock at 2¼c. to 2½c.

**Bars.**—A moderate amount of business is reported, with active mills not as yet running to their full capacity, while quite a number of the Eastern Bar mills still continue idle. Prices are held at 1.50c., Pittsburgh, or 1.66c., tidewater, for Iron Bars, and 1.60c., Pittsburgh, or 1.76c., tidewater, for Steel Bars.

**Plates.**—The local demand consists almost exclusively of small lots for repair work. Prices are firmly held as follows for standard sizes of Plates at tidewater: Sheared Plates, 1.86c. to 1.96c.; Flange Plates, 1.96c. to 2.06c.; Marine Plates, 2.26c. to 2.36c.; Fire Box Plates, 2.75c. to 3.50c., according to specifications.

**Old Material.**—Foundry stock has been rather dull and all grades in this line are cheaper, with quotations reduced 50c. per ton. Rolling mill stock and Steel Scrap are about holding their own in this market, with the only demand for Steel coming from brokers who had been held up for deliveries on contracts for the past three months. The stocks of all kinds, in storage yards and on consumers' premises in this vicinity, are less now than for a long series of years at this season. The railroads are producing much less Scrap than usual because of their diminished amount of traffic, less repairs being made. It is confidently believed that if the manufacturing end of the Iron trade should improve the demand for Scrap would almost immediately show a decided betterment. Quotations per gross ton, New York City, are as follows:

Old Girder and T Rails for melting.....	\$9.50 to \$10.50
Heavy Melting Steel Scrap.....	9.50 to 10.50
Old Steel Rails, rerolling lengths.....	11.00 to 12.00
Relaying Rails.....	18.50 to 19.50
Old Iron Rails.....	14.00 to 15.00
Standard Hammered Iron Car Axles.....	16.50 to 17.50
Old Steel Car Axles.....	14.00 to 14.50
No. 1 Railroad Wrought.....	12.00 to 13.00
Iron Track Scrap.....	10.00 to 11.00
No. 1 Yard Wrought, long.....	11.00 to 12.00
No. 1 Yard Wrought, short.....	10.00 to 11.00
Light Iron.....	5.00 to 6.00
Cast Borings.....	4.50 to 5.50
Wrought Turnings.....	6.00 to 7.00
Wrought Pipe.....	9.00 to 10.00
Old Car Wheels.....	17.50 to 18.50
No. 1 Heavy Cast, broken up.....	13.50 to 14.50
Stove Plate.....	11.50 to 12.50
Grate Bars.....	9.50 to 10.50
Locomotive Grate Bars.....	10.00 to 11.00
Malleable Cast.....	12.00 to 13.00

**Cast Iron Pipe.**—Springfield, Mass., opened bids on 2200 tons on Monday. A purchase of Pipe for Hoboken, N. J., amounting to 1900 tons, was made last week. The contractors who bought secured the Pipe laying job last August, but waited until now to purchase the Pipe and are under-



stood to have saved about \$9 per ton. Not so much business has been done the past week as in the previous week, but the demand has been quite good for small lots and a little more confidence is now shown in values, as manufacturers appear less disposed to compete sharply for such work as is coming up. Carload lots of 6-in. are to be had at \$25 to \$25.50 per net ton, at tidewater.

## The Coal Movement Improving.

BY F. E. SAWARD, NEW YORK.

The railroad movement of Coal tonnage shows an improvement, and that is the best indication of a change in the industrial situation that one could ask for. In January the falling off was as great as 25 per cent. in some cases, and the most recent returns show a decline of but 17½ per cent., as against the same weeks of last year, which is surely a change toward better things, and if there be a lopping off of 10 points from this by May 1 it will be gratifying, indeed.

Prices on some grades of Soft Coal are steadier than they were, as the demurrage Coal has been disposed of. In short, one may say that the situation along the coast line is on the mend, taking it as a whole. Baltimore is moving a fairly good tonnage. Little spot Coal is wanted, however, and prices are low for what is to be had. Business at Lambert Point, Norfolk and Newport News is light as compared with what it should be, and except for a few shippers it amounts to nothing. Mines in the New River and Pocahontas regions are working but two days a week, and this takes care of the orders in good shape. Shippers in those regions are not inclined to force their Coals on the market, however, and this helps out in getting a fair return for the Coal shipped.

The Providence situation has been cleared up, and there is no demurrage Coal standing around at present. The bargain counter offers are now a thing of the past, but will, no doubt, be the topic of conversation for a long time to come. New Haven is reported to be still a dull market. The railroad company is still holding off shipments as much as possible, trying to use up the large quantities delivered recently. This situation will be improved shortly, however, and a better situation will no doubt be reported a week hence.

The New England situation is looking a little better, a few orders having been placed for new shipments, but the volume has been very light as yet. Boston is taking in most of the shipments now being made, Coal being applied on contract business, as a rule. Little tonnage has as yet been ordered to Portland, Portsmouth or Providence. The railroad companies in the East are all taking in shipments, but the volume is kept down materially on one class or another, so that the total is much less than normally. A great cleaning up of stocks is now in progress among all the consumers, and when the market does show an improvement it should be fairly steady.

At New York the great volume of cheap Coal has been cleaned up, and the bargains to be had to-day are almost entirely confined to the higher grades of Coal, many of which can be had at or near the basis of \$1 at the mines. These are being gradually picked up, and if there is any increase in business it will be but a short time before higher prices will be realized for these grades, as they naturally can command business over ordinary grades at the same prices. Philadelphia tidewater business is still dead, there being a very small demand there from the piers at this time. Line business in that section is fair, however, and prices are equal to those prevailing in any market. Coals known in that section are enjoying a very fair business. Prices are about as follows:

Georges Creek.....	\$3.20 to \$3.25
High grade, three-quarter lump.....	3.10 to 3.20
High grade gas, run of mine.....	3.00 to 3.10
Best Miller vein coals.....	2.75 to 2.85
Good Miller and Moshannon.....	2.60 to 2.65
Best Somerset.....	2.70 to 2.80
Ordinary Somerset.....	2.60 to 2.65
Fairmont, three-quarter.....	2.85 to 3.00
Fairmont, run of mine.....	2.80 to 2.85
Odds and ends to relieve embargoes, &c..	2.40 to 2.50

Line Bituminous rates are as follows:

### Pennsylvania Railroad Coals.

Georges Creek.....	\$2.00 to \$2.00
Best Miller vein.....	1.40 to 1.50
Good Miller and Moshannon.....	1.15 to 1.25
Best gas coal, three-quarter lump.....	1.30 to 1.40
Best gas coal, run of mine.....	1.20 to 1.30
Best gas coal, slack.....	.70 to .80
Ordinary Clearfield.....	1.10 to 1.15
Ordinary Latrobe.....	1.00 to 1.10

### Baltimore & Ohio Coals.

Georges Creek.....	\$2.00 to \$2.05
Best Somerset.....	1.25 to 1.30

Somerset.....	1.10 to 1.25
West Virginia Freeport.....	1.00 to 1.10
Fairmont District, three-quarter lump.....	1.00 to 1.10
Fairmont District, run of mine.....	.90 to 1.00
Fairmont District, slack.....	.60 to .75

Anthracite Steam Coals, at tide, may be reported on as follows: Pea is still short in most cases, but has eased up considerably. Buckwheat is not the great drug that it was. It is still difficult to move the cheaper grades at Port Reading at any decent price, but the better grades are getting scarce again. Rice is still short, but the demand is not sufficiently active to advance prices. Some bargains are still to be had. Barley is hard to move. This size has been a drug for the past four months, and the cheaper classes have been sold continually at figures that could not show any returns to the shipper. The line trade has improved in accordance with the situation at tidewater. A week or two ago prices had declined to about April prices on some Coals, but the increased demand has caused a gradual advance again, until full circular is being maintained.

## Iron and Industrial Stocks.

NEW YORK, February 26, 1908.

The stock market has been rather quiet for the greater part of the week. Some strength was manifested on Thursday and Friday, but any gains then made were lost in a slight reaction on Monday, which in some cases progressed a little further on Tuesday. The iron and steel stocks were adversely affected by rumors emanating from Pittsburgh of the cutting of prices on some steel products, but these rumors were not confirmed. The range of prices on active stocks from Thursday of last week to Tuesday of this week was as follows: United States Steel common 27¼ to 29, preferred 91 to 93¼; Car & Foundry common 26 to 26¾; Locomotive common 31¾ to 35, preferred 89½ to 89¾; Steel Foundries common 5 to 5½, preferred 27½ to 29¼; Colorado Fuel 16 to 17½; Cambria Steel 27½ to 27¾; Crucible Steel common 4¼ to 4¾, preferred 33 to 33½; Pressed Steel common 18½ to 19¼, preferred 70 to 71; Republic common 15¼ to 16, preferred 65½ to 67½; Sloss-Sheffield common 40 to 42, preferred 92; Cast Iron Pipe common 18¾ to 19½, preferred 63½ to 64; Can common 4, preferred 45½ to 46¼. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 28¼, preferred 91¾, bonds 87¾; Car & Foundry common 26¾, preferred 84¾; Locomotive common 32, preferred 89; Colorado Fuel 16¼; Pressed Steel common 19½, preferred 71; Railway Spring common 24; Republic common 15¾, preferred 66¼; Sloss-Sheffield common 39¾; Cast Iron Pipe common 18¾, preferred 64; Can common 4½, preferred 45½.

**Dividends.**—The Republic Iron & Steel Company has declared the regular quarterly dividend of 1¾ per cent. on the preferred stock, payable April 1.

The Nova Scotia Steel & Coal Company has declared a quarterly dividend of 2 per cent. on the preferred stock and 1½ per cent. on the common stock, payable April 15.

The International Silver Company has declared a quarterly dividend of 1 per cent. on the preferred stock, payable April 1.

The National Lead Company has declared the regular quarterly dividend of 1¾ per cent. on the common stock, payable April 1; also 1¾ per cent. on the preferred stock, payable March 16.

The General Electric Company has declared the regular quarterly dividend of 2 per cent., payable April 15.

The Robins New Conveyor Company, which has been recently incorporated, will be operated under the management of Thomas Robins, who founded the Robins Conveying Belt Company in 1896 and was its president until March, 1907, when the management passed into other hands. The position of chief engineer in the new company is filled by C. Kemble Baldwin, who has served in the Robins Conveying Belt Company in the same capacity for the last seven years. The offices of the company are at 38 Wall street, New York, and 1240 Old Colony Building, Chicago.

The annual meeting and dinner of the Cincinnati Metal Trades Association will be held Thursday evening, March 5, at the Business Men's Club. The feature of the evening will be an address on "The West Indies and the Panama Canal," by James A. Green of Matthew Addy & Co. Officers will be elected.

## The Lackawanna Steel Company's Report.

President E. A. S. Clarke's comments on the results of the trade of 1907 are in part as follows:

It is with no small satisfaction that your directors report the company as being, in the period of acute depression marking the close of the year, in strong financial and physical condition. The first nine months of 1907 gave opportunity for operating all of the various properties to their full extent, but the last quarter saw them entirely closed down or operating on a greatly reduced basis. All of the properties are in excellent physical condition.

The additional blast furnace at Buffalo, mentioned in last year's report, was completed and put in blast on February 13, 1907, establishing a world's record for rapid construction. It has since that time produced 156,305 gross tons of pig iron. The No. 8 mill, which produces small billets and sheet bars, was completed and put in operation during the month of October.

The company received during 1907 from mines which it owns or in which it is interested 1,941,376 gross tons of iron ore, and produced a total of 788,784 gross tons of coke and 1,008,588 gross tons of pig iron and spiegel-eisen. It also produced 852,055 gross tons of Bessemer ingots and 425,789 gross tons of open hearth ingots, making a total of 1,277,844 tons of steel ingots. Shipments of product were as follows, all in gross tons, the figures for the year 1906 being given for comparison:

	1906.	1907.
Standard rails.....	556,755	523,200
Light rails.....	47,868	48,777
Angle bars, fittings, &c.....	43,639	33,510
Structural shapes.....	121,407	141,455
Plates.....	95,244	113,969
Merchant steel products.....	52,401	61,343
Slabs, billets and blooms.....	17,078	*61,157
Pig iron and miscellaneous.....	34,655	8,289
Totals.....	969,047	991,700

\* Including 3502 tons sheet bars and small billets.

Orders on the books at the close of 1907 amounted to 203,741 gross tons, a decrease of 71.2 per cent. from the corresponding figure for 1906. Delivery on these orders has been largely suspended, pending improved financial conditions. The low priced contracts mentioned in last year's report as having affected the earnings of the year 1906 have been substantially worked out, and the prices received during 1907 represent fairly the market conditions of that year.

It has seemed wise to the directors, owing to general financial and trade conditions, not to consider the declaration of any dividend on the stock, although the earnings would otherwise have warranted it.

The profit and loss account for the year ending December 31, 1907, makes the following showing:

Gross sales and earnings.....	\$33,011,410.43
Less manufacturing cost and operating expenses.....	26,388,013.35
Net income from manufacturing and operating.....	\$6,623,397.08
Dividends on investments in companies not controlled, &c.....	607,660.83
Total income.....	\$7,231,057.91
Deduct administrative and general expenses, taxes, commercial discount, &c.....	799,604.36
Net earnings for year.....	\$6,431,453.55
Less appropriations for sinking funds and exhaustion of minerals.....	\$449,791.28
For depreciation and accruing renewals.....	1,282,189.43
	1,731,980.71
Balance.....	\$4,699,472.84
Deduct interest, rentals and royalties.....	2,255,626.68
Surplus income, for the year, carried to balance sheet.....	\$2,443,846.16

The consolidated balance sheet, including subsidiary companies, as of December 31, is as follows:

Assets.	1907.	1906.
Properties, real estate, plant, &c....	\$49,278,880	\$49,278,880
Additional property acquired and constructed in 1907.....	11,336,186	.....
Investments in ore companies.....	5,032,321	5,289,800
Discount, commercial organization expenses, &c.....	2,350,621	2,332,531
Deferred charges to operation.....	44,951	84,318
Amount in hands of trustees.....	130,435	251,850
Inventories.....	10,322,289	8,517,668
Accounts receivable.....	922,443	848,426
Advanced payment for material and supplies.....	.....	104,498
Customers' accounts.....	4,373,811	5,719,818
Notes receivable.....	593,892	358,198
Cash.....	1,337,346	658,252
Totals.....	\$85,723,177	\$73,444,259
Liabilities.		
Capital stock (outstanding).....	\$34,721,400	\$34,721,400
Stock of Lackawanna Iron & Steel Company not held.....	28,600	28,600
Funded debt.....	*39,904,000	27,725,000
Accounts payable and payrolls.....	2,970,313	4,780,044
Bills payable.....	144,469	2,000,000
Taxes accrued.....	64,117	52,334
Interest accrued.....	489,543	440,751
Sinking and reserve funds.....	2,837,971	1,577,213
Profit and loss surplus.....	4,562,763	2,118,917
Totals.....	\$85,723,177	\$73,444,259

\* Includes \$16,500,000 notes.

## The Riehle Special Vertical Hydraulic Tensile Testing Machine.

A special United States standard vertical hydraulic testing machine, built in capacities of from 100,000 to 600,000 lb., has been designed particularly for steel mills by the Riehle Bros. Testing Machine Company, Philadelphia, Pa. It is arranged for tensile specimens only, and with the use of proper wedge grips will test round, square, flat or octagonal specimens. The straining mechanism consists of a pulling head connected by tension rods to the ram of a hydraulic cylinder located under the base of the machine. The pressure of the cylinder is furnished by a hydraulic power pump, which is directly connected through gearing to a variable speed electric motor. The pulling head is operated in both directions by hydraulic pressure.

The weighing mechanism consists of a weighing head and a main lever supported on columns, so that the load is taken by the main lever in the line of direct tension of the specimen. From the main lever the load is transmitted through intermediate levers to the weighing beam. Provision for receiving the recoil is made in such a manner that the base of the machine absorbs it. The machine is controlled by one valve conveniently placed so that the operator can easily control the motion of the pulling head and the registering of the strain upon the weighing beam. It is furnished with the Riehle dial screw beam, with all the weights up to the maximum marked on the beam. The marks on the beam are made by increments of 10,000 lb., and the readings on the dial go down to 100 lb. For export the beam is made to register in metric weights. The operator moves the poise on the beam by a hand wheel, which is geared to the screw on the beam, and as the screw is turned it propels the poise backward and forward at will.

This is the largest and heaviest testing machine made for steel mill testing laboratories, and is claimed to be very sensitive and accurate, simple in design, massive in construction, and, withal, easy to operate and control. The extreme height of the machine above the floor is 8 ft. 10 in., the extreme width above the floor, not including the weighing beam is 5 ft. 3 in., the extreme length is 9 ft. 2 in., and the weight is 30,000 lb. The variable speed electric motor allows for a wide range of speed control, and renders it especially desirable for commercial testing of tensile specimens. This machine can be designed to be operated by a power hydraulic pump, or an accumulator.



## The Machinery Trade.

NEW YORK, February 26, 1908.

In some lines of machinery equipment there was a decided improvement in the demand the past week. While this was not the case with the machine tool trade, that branch also experienced an increase, though light, in both orders and inquiries. The equipment for which the demand was considerably more active covered machines for power plant installations, particularly air compressors. A leading manufacturer received orders the past week for air compressors about equal to its present capacity, and in addition received a good volume of inquiries. These orders and inquiries, which covered many machines of the largest size, indicate a better demand for machine tools. Dealers in machine tools report a little improvement in business, and feel somewhat encouraged over the small but noticeable increase in inquiries. Since the first of the month an upward tendency has been apparent, and the slight improvement of the past week has created a more optimistic feeling as to the future.

The spring meeting of the National Machine Tool Builders' Association will be held at Atlantic City, N. J., on Tuesday and Wednesday, May 19 and 20. The selection of these dates for the meeting will make it convenient for those to attend who expect to attend the joint meetings of the American Supply and Machinery Manufacturers' Association, the National Supply and Machinery Dealers' Association and the Southern Supply and Machinery Dealers' Association, to be held at Norfolk, Va., May 13, 14 and 15.

### Orders for Large India Iron Works Soon to be Placed

The plans for the large plant to be erected in India by the Tata Iron & Steel Company, Ltd., of Bombay, India, under the supervision of Charles P. Perin, who has offices in this city in the United States Express Company's Building, 2 Rector street, have been about completed, and we are informed that the buying for the big plant will soon be done. Although Mr. Perin will supervise these details, the contracts will be placed, it is understood, from the Pittsburgh office of the Julian Kennedy-Sahlin Company, Ltd., of London, England. This company is affiliated with the engineering firm of Julian Kennedy of Pittsburgh, and some of the engineering details are being worked out in the latter city, as is indicated by inquiries made in the trade along certain lines with a view to arranging for bids. The business to be placed, it is understood, amounts to about \$7,000,000, and the equipment will include blast furnaces, open hearth steel furnaces, rolling mills, coke ovens and a general line of equipment for the manufacture of pig iron, steel rails, plates, bars, &c. At first two blast furnaces of about 200 tons capacity, several basic open hearth furnaces, a blooming mill, rail mill, beam mill and three merchant bar mills will be erected. Additions will be made to the plant according to future demands. Although the business will probably be placed from this country, American manufacturers will have to compete with English and German firms for the trade, as it is announced that equipment will be bought in any of these countries where the orders can be placed most advantageously.

The Lackawanna Steel Company has inquiries out for a 10-ton crane, with 25-ft. span, for its plant at Buffalo, N. Y.

The power equipment, inquiries for which were mentioned last week as having been sent to the trade by a prominent engineering interest, is to be purchased by the Westinghouse Machine Company. Included in the requirements is power equipment aggregating 30,000 boiler hp., of which one-half is to be attached to gas engine equipment. It is thought by some people in the trade that the machinery is intended for the large power house projected by the Pennsylvania Railroad, to be built in connection with its proposed terminal at Harrison, N. J. This plan has been on foot for several years, but was abandoned for a time. The fact that the tunnels under the Hudson River are nearly completed gives strength to the rumor that the railroad company has decided to go ahead with its plans. It is considered a significant fact that no information is available as to who the machinery is intended for or where it is to be delivered, and all bidders are required to give prices f.o.b. cars at their works.

Notwithstanding the fact that the Delaware, Lackawanna & Western Railroad has decided not to equip the large machine shop contemplated for Scranton until 1910, the company is going ahead with its blacksmith shop and foundry. The former building will be 125 x 300 ft., and it is said in the trade that a list for equipping that structure can be expected shortly. This list, however, will not include much in the machine tool line, but will call for a considerable assortment of the usual blacksmith shop machinery. It is understood that the cranes recently closed for with Manning, Maxwell & Moore will be installed in the foundry and some equipment now in use at Scranton will be put there, so the purchasing for that building will not aggregate a large sum. This seems to be about the only railroad purchasing of any

size in view, and machinery men state that not for at least three years past have the inquiries from that source been so scarce. It is stated, however, that some of the roads must necessarily come into the market before long, at least for repair equipment to take the place of worn out machinery.

It is understood that at a meeting of the stockholders of the Southern Car Company, High Point, N. C., held last week, it was decided to rebuild the shops which were recently destroyed by fire. The damage done by the fire was rather heavy, and it is probable that the company will have to purchase considerable new machinery to replace that which was destroyed.

The Nairn Linoleum Company, Kearny, N. J., is installing an addition to its power plant of about 2000 hp., and the equipment is being purchased by W. S. Barstow & Co., engineers, 50 Pine street, New York. Mr. Taylor of that company is in charge of the buying, and contracts have been let for Babcock & Wilcox boilers and Westinghouse electrical equipment. The engine contract, it is understood, has not been closed, and there is considerable in the way of power accessories to be bought. W. S. Barstow & Co. have been placing considerable business in the trade of late, principally in the way of power equipment.

Thomas L. Barret of Donigan & Barret, Louisville, Ky., is interested in a project to establish a small rivet plant and would like to have information and prices on the installation of equipment, the cost and maintenance of a plant, &c.

The Frevert Machinery Company, 18 Dey street, New York, which represents a number of well-known manufacturers of machine tools, has lately received an order for a small lot of machine tools for the manufacture of a new rotary engine in this city.

The fine shop equipment of the Newcomb Motor Works at 378 Jackson avenue, Long Island City, which have been advertised for sale in the trade, has been closed out to the J. J. McCabe Company, 14 Dey street, New York. The equipment includes a good line of first-class machine tools, some of which are practically new.

But one bid was received at the State Department of Public Works, Albany, N. Y., February 18, for the completion of the work on Barge Canal contract No. 17, which was originally held by the Schofield Company, but was rescinded last October when that company went into bankruptcy. The bid received was from Alexander Murdock, Baltimore, Md., and was about \$24,000 over the original contract price.

### Business Changes.

The general offices of the International Steam Pump Company and its subsidiaries—Henry R. Worthington, George F. Blake Mfg. Company, Knowles Steam Pump Works, Laidlaw-Dunn-Gordon Company, Clayton Air Compressor Works, Snow Steam Pump Works, Holly Mfg. Company, Dean Steam Pump Company—have been moved from 114 Liberty street to 115 Broadway, New York. The repair shops of the subsidiary companies have been moved to 44 Trinity place, where a complete line of repair parts of the standard pumps will be kept in stock. A full equipment to make necessary repairs has been installed.

## Chicago Machinery Market.

CHICAGO, ILL., February 25, 1908.

The most favorable feature observed in the machinery market is, perhaps, noted in the degree of interest manifested in the number of inquiries that continue to come in. Considering the abatement of activity in manufacturing plants during recent months, there has all along been an amount of inquiry for equipment quite out of proportion to the actual business closed. Some of the machine tool dealers say that orders are now beginning to develop from negotiations begun a month or more ago, but these transactions generally cover individual tools or small equipment, and rarely include orders of notable size. Quite a number of small shops have been organized throughout the West and a fair amount of business is coming from these sources. Occasional sales of high class tools are also being made to the larger interests, who are seeking to minimize costs of production by the introduction of more efficient machines. While improvement is slow, better progress is confidently expected as the season advances, and the early spring months should show a marked increase of trade in all machinery lines.

The Fort Smith Well Drill Mfg. Company, Fort Smith, Ark., has been reorganized and incorporated with a capital stock of \$25,000, this action being taken for the purpose of putting the company in position to better handle its rapidly increasing business. Among the new equipment that will be required in the near future are a lathe and power hammer. If good second-hand machines can be found they will be purchased to supply this need. The officers of the company are: S. L. Johnson, president; S. T. Rowe, vice-president; F. E. Gilmore, secretary and treasurer.

Among the recent shipments of equipment made by the Northern Engineering Works, Detroit, Mich., are a 15-ton,

40-ft. span Northern traveling crane, furnished to the Iron-ton Iron Company, and a Newton cupola of 5 tons per hour capacity for the Woburn Iron Foundry Company, Woburn, Mass.

The Nickerson-MacFarlane Machinery Company, Tacoma, Wash., has been incorporated with a capital of \$15,000, and for the equipment of its plant is now in the market for two 72 in. by 18 ft. return tubular boilers, with a pressure capacity of 125 lb. A 60-ft. smoke stack, 50 in. in diameter, will also be required.

The Prineville Light & Water Company, Prineville, Ore., is arranging for the installation of a 2000-hp. generating station at Lava Falls, 6 miles south of Bend. A transmission line 50 miles long will be built and two 1000-hp. alternating current generators will be required. Construction work is to begin within the next two months and the plant is to be completed within a year. The manager of the company is H. V. Gates.

A. C. Merritt, engineer of the Andrews Light & Power Company, Salmon, Idaho, advises that the installation of a hydro-electric plant for lighting and power is under contemplation by that company, for the equipment of which generators, water turbines and other material will be needed.

The installation of an electric light plant is being contemplated by Louis Miller, Arcadia, Mo., who has also decided to increase the capacity of his ice plant.

The purchase of some additional equipment is contemplated for the municipal electric light plant of Springfield, Ill. The amount to be expended for this purpose is estimated at \$5000, but the actual requirements will not be determined until the annual appropriation is made. This matter will be passed upon in the near future.

### Cleveland Machinery Market.

CLEVELAND, OHIO, February 25, 1908.

The most encouraging feature of the machinery market is that inquiries show some improvement, and some of these inquiries are coming from larger manufacturing plants that have not been in the market for any tools during the past few months. Business conditions with these latter companies have improved enough to warrant them to put in tools that are needed, but the purchase of which has been delayed pending an improvement in the industrial situation. These inquiries are mostly for two or three tools. While about all the buying during the past few weeks has been of small tools, in the new inquiries that are now coming in there is more call for larger tools. As to actual sales it cannot be said that business has improved during the past week, but dealers regard the situation as looking somewhat better.

As far as the large local plants are concerned, the automobile industry has shown considerable improvement during the past week or two. Some of the builders who have been holding off waiting for an improvement in industrial conditions are now operating their plants at fuller capacity and have placed belated orders for automobile parts. As a result makers of the various parts now have more work on hand than they have had for several months. The annual automobile show that was held in this city during the past week proved very satisfactory in every way and gave considerable encouragement to manufacturers. Not only was the attendance very large, but a very satisfactory number of orders were booked by the sales agents for the various machines. Dealers expect some buying of machine tools by the automobile builders in the next few months.

While the demand for heavy machinery for coal and ore handling and for mines shows but little, if any, improvement, builders of this kind of machinery report considerable improvement in inquiries for their smaller machinery. Builders of tanks and other heavy plate work report that the volume of new business is still very light.

While jobbing foundries report a slight temporary improvement in their orders, their business is still far from satisfactory. The strong competition to get the small available volume of orders has resulted in considerable price cutting, and few foundries are being operated at more than half their full capacity. No cut has been made in molders' wages, but there has been some readjustment in piece work.

The erection of the new foundry of the Bay View Foundry Company, Sandusky, Ohio, which was held up late last fall, will now be rushed to completion. Bids for the machinery equipment will be received in the next two weeks by the Osborn Engineering Company of this city, which prepared the plans. The company is in the market for a 15-ton electric traveling crane, two gas engines, sand blast, tumbling barrels and other foundry equipment.

The Snyder Electrical Mfg. Company, Canal Dover, Ohio, which was recently incorporated with a capital stock of \$25,000, will have its new plant ready for operation in a short time. The products will include dynamos, generators and other electrical machinery, exhaust fans, &c. Most of the machinery equipment has been purchased, but the com-

pany is now in the market for two punch presses and a power hack saw.

Although it doubled the capacity of its plant six months ago the Warren City Boiler Works, Warren, Ohio, has been able to keep running at full capacity night and day until about two weeks ago. The plant is now being operated with 80 per cent. of its day force.

At the annual meeting of the Berger Mfg. Company, Canton, Ohio, held last week, the following officers were elected for the ensuing year: Ed. A. Langenbach, president and general manager; Fred Snyder of Massillon, first vice-president; R. H. Yancey, second vice-president; C. A. Irwin, secretary and general superintendent; Frank A. Schwertner, treasurer, and C. W. Kreis, assistant treasurer and auditor. The only change made was the creation of the office of second vice-president. The officers compose the Board of Directors. The financial report for the past year was very satisfactory. Prospects for the coming year's business, considering present conditions, were declared to be quite encouraging.

The Electrical Repair & Construction Company, Cleveland, which has been engaged in business under that name, has been incorporated, with a capital stock of \$10,000, by Edward Snyder and others.

With a capitalization of \$20,000, the Wood County Fence Company, Bowling Green, Ohio, has been incorporated by A. H. Jones, Charles F. Schuler, W. W. Miller, T. D. Straser and L. M. Wonder.

The Enterprise Electrical Company, Warren, Ohio, has been organized, with a capital stock of \$25,000, and will take over the business of the Peerless Transformer Company. For the present it will manufacture only transformers, but later will probably branch out in other lines of the electrical manufacturing business. The officers of the new company are R. A. Cobb, president; C. B. McCurdy, vice-president; N. A. Cobb, secretary; F. P. McBerty, treasurer.

The National Refined Iron Horseshoe Company, Toledo, Ohio, has been incorporated, with a capital stock of \$10,000, by James Austin, Jr., W. E. Cordill, John Schlatter, H. J. Leary and A. F. Hanson. The company has secured a plant on Dorr street for the manufacture of horseshoes.

The Village Council of Dresden, Ohio, is considering the construction of a water works system. The installation of a plant to cost about \$25,000 is proposed.

The Standard Stamping Company, Marysville, Ohio, has increased its capital stock from \$70,000 to \$100,000.

The Burton & Johnson Company, machinist, Cleveland, has been incorporated, with a capital stock of \$10,000, by C. G. Burton, N. A. Johnson and others.

### Cincinnati Machinery Market.

CINCINNATI, OHIO, February 25, 1908.

Present conditions and future possibilities are variously estimated by those most interested in this manufacturing district. Along some lines the spirit of optimism and confidence is so pronounced that owners of large tool plants affect to believe that a comparatively early return to normal business conditions is presaged in the increase in volume of inquiries, the placing of some good orders by the dealers and the reports that railroads are making specifications. In the line of milling machines particularly there seems to be a marked improvement. One large company here regards the transactions of the past 10 days or so of sufficient importance to suggest a resumption of operations in every department and on full time within three or four weeks. Working time in this plant ranges now from 43 to 55 hours per week. Machines have been shipped recently to New York, Syracuse, Buffalo, the New England States and Canada. In the line of lathes, drills, shapers, &c., some companies report inquiries better, but in the main the improvement in sales is not so marked.

During the early weeks of the new year, and while the effects of the depression were most severely felt, a number of the larger tool manufacturers have utilized the time to good advantage in making minor improvements and overhauling and cleaning up departments which were badly in need of attention. As a result the greater part of the tool manufacturing interests are in excellent shape for a business revival, the beneficial results of which will be appreciated first by the shrewd ones who have paved the way by judicious advertising of favorite types and the placing of attractive catalogues and circular work in the hands of those who will need the machinery.

Comparatively little demand marks the condition of business with the second-hand dealers, such machinery as is sold now being of the smaller lines of tools and parts to replace worn out features. There is not enough improvement in the situation at the jobbing foundries to be worthy of qualification.

A number of manufacturers in other parts of the country seem to find Cincinnati's location and advantages sufficiently attractive to warrant investigation. In two instances re-



cently, through the co-operation and assistance of the Industrial Bureau, companies have decided to make the city their headquarters. One of these the Ohio Bevel Gear Company, formerly of Philadelphia, was mentioned last week. The other is the Avon Street Foundry of Rockford, Ill., which manufactures cone pulleys by a special process. Several trips were made to Cincinnati by Samuel Griffith and J. W. Crist of this company and, with the assistance of Secretary W. L. Finch of the Industrial Bureau, decided upon the plant of the Andrew Messmer Company in Patterson street as a base of operations, taking a lease for a term of years. Both companies will furnish their own capital. The company manufacturing the cone pulleys finds a good demand in Cincinnati for its product, and also in Cleveland, Pittsburgh and other cities of the Central West. In the beginning of operations, approximately March 1, it will employ 35 men. The Messmer plant has been used largely in the interests of the Cincinnati Milling Machine Company and latterly, during the preparation of its new foundry in Oakley, was the base of operations for experimental work.

The annual meeting of the J. A. Fay & Egan Company, manufacturer of woodworking machinery, was held February 18. Directors were elected as follows: Thomas P. Egan, S. P. Egan, J. Bruce, Joseph Rawson, L. G. Robinson, C. P. Egan, Rudolph Kleybolte, A. A. Faber and F. T. Egan. Thomas P. Egan was re-elected president; S. P. Egan, first vice-president; F. T. Egan, second vice-president; W. M. Green, secretary, and A. A. Faber, treasurer. The directors declared a dividend of 1½ per cent. on both preferred and common stocks. The secretary's report indicated that the company has done the largest business of its existence in the fiscal year just closed.

The Osborne & Sexton Machinery Company, Columbus, incorporated early in the year, has located a branch office in Cincinnati and will establish one also in Seattle, Wash. The last named office is to be an important one in the distribution of the company's products on the coast and for export to the Orient. The company handles woodworking machinery, engines and power generating equipment. The Columbus headquarters are at 243-245 North Front street.

The Highland Iron Works Company, Terre Haute, Ind., has instituted a four days' run per week, and announces through Secretary William M. Myers that an early resumption of work in all departments and on full time is a possibility.

A message from the Dayton Motor Car Company, Dayton, Ohio, which was damaged by fire a few days ago, indicates that the damage was greatly exaggerated. The loss was confined almost wholly to unfinished bodies, trimming, &c. The fire started in the trimming room.

E. C. Entwistle, chief engineer of the Lorain Steel Company, Johnstown, Pa., lectured before the Engineers' Club of Cincinnati Wednesday night on "Special Track Work and Its Manufacture." At the next meeting of the Engineers, March 19, J. P. Bouscaren of the city engineering staff will lecture on "Track Elevation and Subways."

The Stewart-Holland Company has been incorporated in Covington, Ky., with a capital stock of \$2500, to buy and sell iron fencing. The incorporators are C. L. Holland, Robert Stewart and M. H. McLean.

E. M. Frank of Jeffersonville, Ind., and Pearl Bogue and T. W. Overman of Monon, Ind., have secured for the American Car & Foundry Company near Jeffersonville several thousand acres of land by option, upon which the company will prospect for oil and gas.

The tube plant of the Mark Mfg. Company at Zanesville, Ohio, is now in operation.

Arrangements are under way for an early beginning of operations at the new plant of the Ohio Lock & Nut Company in East Columbus, Ohio. Installation of machinery is now about completed. The company manufactures standard bolts, nuts and washers, and also a patent lock nut which was formerly made in a plant at Lancaster, Ohio.

Operations have been resumed at the plant of the Ralston Steel Car Company in East Columbus, Ohio, with a force of 900 men. During the short period of inactivity new engines were installed, and some extensive repairs made.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., February 25, 1908.

While there have been a few more inquiries before the trade, the actual volume of machinery business closed shows no appreciable increase. Practically every branch of the trade is quiet, and it is reported difficult to get prospective buyers to place orders. Competition for what little business is going is pretty sharp, and the trade generally is giving close attention to all possible purchases of equipment. Prices on the better grades of tools are said to be firm, but on some of the less well known grades it is reported that concessions are being made. The railroads, which are important buyers in the machine tool trade under ordinary circum-

stances, show no disposition to enter the market, and probably will not be extensive purchasers of any large equipment until the general situation assumes more definite shape.

Manufacturers find no change in the situation. Orders coming in are pretty well scattered, and are confined almost entirely to the smaller classes of tools. Occasionally an order will come out for a tool of medium size, but as a rule these are pretty scarce. A little more activity is to be noted in the demand for special tools of some characters. Electric cranes have been in better demand, and several medium sized orders have been placed, while the inquiries are sufficient to lead manufacturers to believe that more business of this character will be placed before a great while. Single tool orders continue the feature of the market. Occasionally an order for two or three tools has been booked by some manufacturer or dealer, but such orders are few and far apart. Plants continue to operate on a very conservative basis, in some cases production not being over 30 per cent., the smaller plants being if anything the more fully occupied.

The export trade continues quiet. Practically no new business in the way of standard machine tools has developed, although there have been a few scattered orders for special equipment. Those transacting an established trade abroad, particularly in machinery specialties, report business hardly as active as it was this time last month.

The demand for second-hand machinery continues dull and featureless. Sales have been largely of a minor character and cover a varied range of tools. Not a great deal of improvement is looked for until the general situation shows signs of improvement. The same condition is to be noted in the demand for second-hand boilers and engines. There is some little business being placed, but on the whole the amount is far below the average. Several small projects have been closed up, but there is no business of any size, either in old or new equipment.

The foundry trade continues dull. In some cases inquiries are reported a little more active, but they do not develop into business very satisfactorily. Plants are still running irregularly, and dependent almost entirely on day to day orders. Some plants are still able to run four and five days a week; others, however, are unable to do more than three days on an average. Business for forward delivery is scarce, consumers in almost every case placing orders for only enough castings to meet their immediate requirements.

The Philadelphia Supply & Machinery Dealers' Association held its annual meeting, February 19. Routine business was transacted, and the following officers were re-elected for the ensuing year: President, Alfred M. Maddock, Maddock & Co.; vice-president, W. E. Shipley, W. E. Shipley Company; secretary-treasurer, Frank Clouds, Powell, Clouds & Co. It was decided to hold the annual banquet of the association on March 19, and the following committee was appointed to make the necessary arrangements: F. C. Spaulding, A. M. Maddock, W. E. Shipley and Frank Clouds.

The Philadelphia Mint has asked for an appropriation of \$40,000 for the construction of two coal bunkers and mechanical appliances for use in connection therewith. Congress appropriated \$20,000 for this purpose last year, but proposals were considerably higher than this amount, and action was deferred pending further legislation by Congress.

It is stated that the revised plans of A. F. Lackey, Harbor Engineer, Baltimore, Md., have been approved by the Board of Awards, for the construction of the proposed new piers, Nos. 4, 5, and 6 in that city. By the new plans, pier No. 4 will have a slip 70 ft. wide at the south end. The same pier will be widened to have a driveway of 42 ft. The bulkhead on pier No. 5 has been reduced to 515 ft. Pier No. 6 will be 530 ft. wide at the south end and will slope to a width of 90 ft. at the north end. The bridges across Canton and Eastern avenues will be removed, and Jones Falls will be dredged to a depth of 20 ft. The new piers will be constructed entirely of concrete and steel, and the cost will be about \$800,000.

Plans have been completed by Heacock & Hokanson, architects, for a new five-story steel and slow burning construction warehouse, 83 x 106 ft., to be built for Berger Bros., at 106-114 Broad street. Bids for the building are now being taken.

Pottsville, Pa., will take action, at a special election in the near future, on the matter of constructing a \$300,000 sewage filtration system, which has been recommended by the Inspectors of the State Board of Health.

Ballinger & Ferrott, architects and engineers, have been commissioned to prepare plans and specifications for a large addition to the plant of the Duplan Silk Company, Hazleton, Pa. The proposed building is to have a frontage of 200 ft. and a depth of 300 ft., part one and part two stories high. The present power plant of the company will be extended, as will also the heating arrangements, which will be done, it is understood, by the blower system.

J. E. & A. L. Pennock, contractors, have plans, by E. W. Deane, Boston, Mass., for a two-story fibre mill, 127 x 213 ft., to be erected for the Diamond State Fibre Company, Wilmington, Del., at Bridgeport, Pa. The structure is to be of steel, concrete and brick construction.

## New England Machinery Market.

WORCESTER, MASS., February 25, 1908.

Numerous inquiries and some sales are the salient features of the machinery market. The dealers and their salesmen are exceedingly busy seeking new business, especially in looking into the wants of those who have inquired as to machinery. A few good orders have been booked, not for large amounts of machinery, but netting totals very grateful to the fortunate dealers. Second-hand machinery is in better demand than new, and there is an abundance of desirable tools for those who are not particular about securing new equipment.

The entire equipment of the American Roller Bearing Company, South Framingham, Mass., will be disposed of by the receiver, F. B. Hill, through the agency of the Prentiss Tool & Supply Company, Boston. The list is an unusual one, comprising a notable array of machinery of the best makes. Besides the standard machine tools of more common types there is a fine list of automatics, grinders, and special machinery. The grinders include Brown & Sharpe, Cincinnati, and Walker universal grinders, and Pratt & Whitney and Rivett special grinders. Among the automatics are two Jones & Lamson, Bardons & Oliver, Gridley, Pratt & Whitney, and Windsor and Pierson screw machines.

Machinery auctions held last week realized better prices than would be expected at this time, the dealers being the chief buyers of machine tools. In the equipment of the Hutchings-Votey Organ Company, Cambridge, Mass., which was disposed of under the hammer, was a considerable number of woodworking machines, which brought fair figures, the buyers including organ builders, who secured machinery for their own works.

The naval torpedo factory at Newport, R. I., has been completed and turned over to the Government. It is equipped to manufacture 50 18-in. torpedoes annually, but space is furnished to increase this capacity to 250 to 300 torpedoes. It is anticipated that it will be only a short time before the increase will be made, for it is well understood that the navy has a constantly increasing need of torpedoes, and difficulty has been found in procuring them in the market. The increase in equipment will be large when the greater production is decided upon. The factory will begin operations about April 1.

Charles E. House & Sons, Brooklyn, manufacturers of piano supplies, have acquired the Sunnyside mill property at Unionville, Conn., and will establish their factory on the premises.

The business of the Commonwealth Machine Company, Worcester, Mass., manufacturer of sheet metal working machinery, is to be wound up, owing to the death of the managing head of the company, H. M. Smith. The company builds a new line of machines specially designed for cornice work. The machine tools, patent rights, patterns and drawings will be sold.

The Worcester Injector & Valve Company, manufacturer of steam and railroad supplies, and the Dodge-Sander Company, manufacturer of steam and electric railroad supplies, have established a factory at 11 Union street, Worcester, Mass. N. B. Dodge is president and George H. Scott treasurer of the Worcester Injector & Valve Company, and Mr. Scott is manager of the Dodge-Sander Company.

The O. H. Jones Company, Hartford, Conn., manufacturer of plumbers' supplies, has increased its capitalization from \$10,000 to \$25,000, the new funds to be used for increasing the business and for the purchase of the building which is occupied for the business.

The textile industry, which is always a factor in the machine tool trade, and more important in the supply trade, promises to do some new building this season. In Torrington, Conn., the Warrenton Woolen Company has plans for an entirely new plant, consisting of a main factory, 79 x 330 ft., and two stories; boiler house, 45 x 60 ft.; besides large storage buildings. The buildings will have steam heat, automatic sprinklers and two freight elevators. The total cost will be \$150,000. The West End Thread Company, Millbury, Mass., will erect additions consisting of a two-story mill, 60 x 110 ft.; two-story reeling building, 40 x 60 ft., and dye and bleach house. The Colored Worsted Mills, Providence, R. I., will build an addition. The Pine Tree Worsted Company, Putnam, Conn., whose mills were burned recently, will rebuild.

A dispatch from Bridgeport, Conn., states that the Electric Cable Company of that city, whose plant was damaged to the extent of \$70,000 last week, will rebuild immediately. One large building was destroyed.

It is stated that 99 per cent. of the claims against the Westinghouse Machine Company of Pittsburgh have been deposited in accordance with the plans of the Reorganization Committee, and that the plant will soon be taken out of the receivers' hands.

## Government Purchases.

WASHINGTON, D. C., February 25, 1908.

The Isthmian Canal Commission will receive bids until March 16, circular No. 426, for pumps, tubular boilers and other supplies.

The Bureau of Yards and Docks, Navy Department, Washington, will receive bids until March 28 for two boilers for the navy yard at Bremerton, Wash.

The following bids were opened February 18, circular No. 414, for supplies for the Isthmian Canal Commission:

Class 1, two cable railways—Bidder 1, Exeter Machine Works, Exeter, N. H., \$31,500; 3, Arthur Koppel, New York, cars only, \$7500; 4, Meade Morrison Mfg. Company, New York, \$67,300; alternate proposition on bidder's specifications, \$51,400; 5, Wontham-Magor Engineering Works, New York, \$28,696; 8, Guaranty Construction Company, New York, \$34,480; 12, Atlantic Gulf & Pacific Company, New York, \$84,650; 14, Bergen Point Iron Works, New York, \$29,174; alternate proposition, \$28,990; 15, New Jersey Foundry & Machine Company, New York, \$51,400; for Koppel car, \$49,150, or for certain specified changes, \$48,500.

Class 2, eight duplex cableways—Bidder 2, S. Flory Mfg. Company, Bangor, Pa., \$574,900; 7, Brown Hoisting Machinery Company, Cleveland, Ohio, \$1,155,000; 9, New York Cableway & Engineering Company, New York, bid A, for Johnson bucket and no motors for towers, \$399,975; B, for Johnson bucket and extra motors with 2000 ft. of chain, \$420,890; C, for Johnson bucket and motors with 3200 ft. of chain, \$438,895; D, for Johnson bucket with motors and drive wheels for towers only, \$430,500; E, with Johnson bucket and motors with all drive wheels, \$458,750; F, with Hayward or Browning bucket without motors, \$420,200; G, Hayward or Browning bucket with extra motors and 2000 ft. of fixed chain, \$440,890; H, for Hayward or Browning bucket, extra motors and 3200 ft. of fixed chain, \$457,095; I, Hayward or Browning bucket with extra motors and driving wheels for locking towers on locks only, \$450,700; J, for Hayward or Browning bucket, extra motors, and drive wheels for all towers, \$478,950; 10, Lambert Hoisting Engine Company, Newark, N. J., regular specifications, \$418,264; bidder's specifications, \$423,264 and \$425,264; 11, Lidgerwood Mfg. Company, New York, in accordance with various specifications and plans submitted, \$386,607, \$397,601, \$361,821, or \$369,700; 13, Balanced Cable Crane Company, New York, \$275,000 for 16 balanced cableways; for 12 with one-load carriages and four with two-load carriages, add \$32,000.

The following awards have been made for supplies for the Isthmian Canal Commission under opening of January 20, circular No. 412:

Ingersoll-Rand Company, New York, class 7, 30 sand pumps, \$48.

W. Bingham Company, Cleveland, Ohio, class 9, one valve reseat, \$73.50.

The Henshaw-Bulkley Company, San Francisco, Cal., has been awarded class 72, one motor driven emery grinder, \$310, under opening of January 22 for machinery for the navy yards.

The following awards have been made for supplies for the Isthmian Canal Commission, bids for which were opened December 6, circular No. 402:

Henry R. Worthington, New York, class 2, two 500-gal. pumps, \$1210.24.

Manning, Maxwell & Moore, New York, class 4, one portable riveter, \$749.90; class 6, three pneumatic motors, \$418.86.

Ingersoll-Rand Company, New York, class 5, six pneumatic riveters, \$1100.

The Oliver Machinery Company, New York, has been awarded class 21, one woodworking machine, \$3100, under opening of February 11 for supplies for the navy yards.

The following awards have been made for supplies for the navy yards, bids for which were opened February 4:

Brewster Engineering Company, Hoboken, N. J., class 51, one rotary blower, \$590.

R. W. Geldart, New York, class 121, one portable electric post grinder and one portable electric hand or breast drill, \$97.48.

## Trade Publications.

**Motor Driven Apparatus.**—Emerson Electric Mfg. Company, St. Louis, Mo. Reference supplement to the Emerson Monthly. Contains a classified index of manufacturers or dealers in motor driven outfits equipped with Emerson motors, including blowers, pumps, grinders, portable electric tools, sewing machines, washing machines and an extensive list of small apparatus to the drive of which electric motors are adapted.

**Pressure Recorders.**—Crosby Steam Gauge & Valve Company, 16 Dey street, New York. February issue of the Crosby. Contains an illustrated description of the Crosby pressure recorder and the Crosby combined pressure recorder and gauge. Both are adapted to measure the pressure of any fluid, and a special form is made for pressures either above or below the atmosphere.

**Smoke Preventers.**—The Pittsburgh Automatic Smoke Preventer Company, 1105 Keystone Building, Pittsburgh, Pa. Pamphlet. Refers to the improved Western smoke preventer, which is claimed to insure perfect combustion, abate smoke 95 per cent., and decrease a fuel bill 10 per cent. Some testimonial letters are included.

**Rail Chairs.**—T. H. Symington Company, Calvert Building, Baltimore, Md. Leaflet. Contains illustrations and a brief description of the Gilchrist plain and reinforced rail chairs, which are simple and efficient devices for securely adjusting steel rails to concrete work.

**Power Plants.**—Ridgway Dynamo & Engine Company, Ridgway, Pa. Bulletin No. 18. Presents illustrations of installations of the company's engines and generators.



## Production of Bessemer Steel Ingots and Rails in 1907.

As indicated by the pig iron statistics heretofore published, the production of Bessemer steel in 1907 was less than that of 1906. Of the total decrease of 608,281 gross tons, 403,633 tons, or about two-thirds, was in Bessemer steel rails. The American Iron and Steel Association has just completed the compilation of the returns from steel manufacturers, representing the production of Bessemer steel ingots and castings in the United States in 1907; also of Bessemer steel rails rolled by the producers of Bessemer steel ingots.

### Ingots and Castings.

The total production of Bessemer steel ingots and castings in 1907 was 11,667,549 gross tons, against 12,275,830 tons in 1906, a decrease of 608,281 tons. The production in 1906 was the largest in our history. The following table gives the production of Bessemer steel ingots and castings in the last six years. Of the total production in 1907 about 33,300 tons was steel castings, as against 32,601 tons in 1906, 22,103 tons in 1905, and 16,051 tons in 1904.

Years.	Gross tons.	Years.	Gross tons.
1902.....	9,138,363	1905.....	10,941,375
1903.....	8,592,829	1906.....	12,275,830
1904.....	7,859,140	1907.....	11,667,549

Below is given, by States, the production of Bessemer steel ingots and castings, in gross tons, since 1904:

	1904.	1905.	1906.	1907.
Pennsylvania...	3,464,650	4,491,445	4,827,725	4,351,841
Ohio.....	2,050,115	3,131,149	3,769,913	3,636,679
Illinois.....	1,257,190	1,651,250	1,684,772	1,723,073
Other States....	1,087,185	1,667,531	1,993,420	1,955,956
Totals....	7,859,140	10,941,375	12,275,830	11,667,549

In addition to the States named in the table Massachusetts, Connecticut, New York, New Jersey, Delaware, Maryland, District of Columbia, Virginia, West Virginia, Kentucky, Michigan, Wisconsin, Minnesota, Missouri, Colorado and Oregon made steel ingots or castings in 1907 by the standard Bessemer process or by modified Bessemer processes.

### Bessemer Rails.

The production of all kinds of Bessemer steel rails by the makers of Bessemer steel ingots in 1907 was 3,302,009 gross tons, against 3,705,642 tons in 1906, a decrease of 403,633 tons. The maximum production of Bessemer steel rails was reached in 1906. The following table gives the production by States of Bessemer steel rails by the producers of Bessemer steel ingots in the last four years. Included in the figures for 1907 are 145,601 tons of rerolled or renewed rails rolled by companies which manufacture Bessemer ingots:

	1904.	1905.	1906.	1907.
Pennsylvania ..	801,657	1,095,154	1,298,409	1,093,932
Other States....	1,283,031	2,040,575	2,407,233	2,208,077
Totals....	2,084,688	3,135,729	3,705,642	3,302,009

The following table separates the production of rails weighing 45 lb. and less than 85 lb. to the yard from those weighing less than 45 lb. and over 85 lb. Bessemer rails rolled by companies which do not make Bessemer ingots are not included:

	Under 45 lb.	45 lb. and less than 85 lb.	85 lb. and over.	Total.
Pennsylvania ..	125,829	560,730	407,373	1,093,932
Other States....	98,159	823,760	1,286,158	2,208,077
Totals....	223,988	1,384,490	1,693,531	3,302,009

The total production of rails in 1907 will include rails made from open hearth steel, rails rolled from purchased blooms, crop ends, and seconds, rails rerolled or renewed by nonproducers of steel ingots, and iron rails. The total from these sources in 1906 amounted to 272,245 tons, of which 186,413 tons were open hearth steel rails, 85,817 tons were Bessemer rails rolled by nonproducers of Bessemer ingots, and 15 tons were iron rails. For 1907 the total from these sources amounted to about 335,000 tons, of which fully 250,000 tons is open hearth rails, making the total rail production for that year about 3,637,000 tons, against an ascertained total of 3,977,887 tons in 1906.

## American Implement Makers to Benefit by the Franco-Canadian Treaty.

TORONTO, February 24, 1908.—In the Canadian House of Commons, on February 20, Mr. Zimmerman, one of the members for the city of Hamilton, made a statement concerning an effect of the commercial treaty that has been negotiated between France and Canada. He said that the International Harvester Company, at whose Hamilton works 1800 men are employed, was so much impressed with the trade possibilities of the treaty that the heads of its export department had come from Illinois to look into the advantages their Canadian center has to offer as a base of operations for foreign business. As a result, he said, they had practically decided that the whole of their export trade with France, now amounting to more than \$2,000,000 per annum, shall hereafter be attended to by the Canadian works. Mr. Zimmerman added that this would probably cause a doubling of the capacity of the Hamilton plant.

Agricultural machinery is one of the classes of Canadian articles to which the treaty extends the privileges of the French minimum tariff. Even with the duties on these products at the high rates of the French general tariff, Canadian manufacturers of agricultural implements thought the French market worth cultivating.

The privilege of the French minimum tariff is not the only advantage that an American implement plant manufacturing for export would enjoy in Canada. While Canada is not a large producer of the iron and steel required as material for the manufacture of implements, the Canadian tariff law offers extremely favorable terms for the special benefit of makers of harvesters and mowers and parts thereof. Rolled iron, rolled steel and pig iron, when imported for the manufacture in Canada of mowing machines, reapers, harvesters, binders and attachments for binders, are favored with a drawback of 99 per cent. of the duty. The heading of Schedule B and the language of Section 10 of the Customs Administrative act, 1907, are sometimes misunderstood, the expressions "for home consumption" and "for consumption in Canada" being erroneously supposed to apply to the manufactured product, whereas they refer to the imported material. Imported iron and steel manufactured into harvesters and mowers in Canadian works are consumed in Canada, and this utilization entitles the Canadian manufacturer to a refund of 99 per cent. of the duty. The mowers and harvesters themselves may or may not be "consumed" in Canada. The payment of the drawback is in no way conditional upon what market they are sold in. Formerly the drawback was payable only upon imported materials whose Canadian manufactured product was exported.

For the further facilitating of trade between Canada and France, the Dominion Government proposes to subsidize a steamship line, to operate directly between French and Canadian ports. A resolution providing for the payment of \$100,000 a year to such a line was recently tabled in the House of Commons by the Minister of Marine and Fisheries. This is to be the amount of the annual subsidy if 18 round voyages are made per year. If that number of voyages is exceeded, the subsidy is to be proportionately increased. The privileges of the treaty, it may be necessary to remind readers, are for the most part restricted to merchandise shipped directly from one of the contracting countries to the other. This feature of the treaty is not approved in Ontario, where mercantile interests place a premium on haste. Some protests have been made by Ontario interests against the elimination of New York as an intermediary in the trade between France and Canada, holding that the greater frequency of the steamship communications between France and the United States metropolis is of advantage when dispatch is an element of importance in the business. At all events, direct steamship service is to be established between France and Canada as a requirement of the treaty, and the benefit of that service will be an additional attraction to the American implement manufacturers with works in Canada.

C. A. C. J.

# HARDWARE

**A**N illustration of the association movement on what may be regarded as ideal lines is furnished in the case of a Western Hardwareman who has what may be termed a fourfold association relationship, which doubtless finds parallel in other States and many another retail Hardware house. The merchant in question is one of the many who are represented by the National Retail Hardware Association, and is thus brought into a wide if somewhat vague and general identification with the association movement in its broadest scope. This may be termed his association relationship number one.

This connection with the National Association is obtained through his membership in a State association, in whose meetings he participates as an alert and interested delegate, receiving and giving suggestions and thus contributing to the success of the gathering. The value of such meetings, even though held only annually, is regarded by him as justifying his absence for several days from his regular responsibilities to which he returns with new ideas, a broader outlook and renewed enthusiasm and intelligence. This is his association relationship number two.

At this point the organization activity of many loyal members of State associations ceases. Their own State organization is the only form of association work in which they participate. The merchant in question is not content to let the good work stop at this point, but catching the spirit of fraternity and co-operation which is pretty sure to give good results wherever found, he is a leading member of a local get-together movement with which the various merchants of his town are connected, in an effort to promote the general trade interests of their community, and to take measures of one kind or another in which they work together for the advancement of their common interests. In the case in point there is a monthly meeting which conducted in the spirit of mutual regard and co-operation is said to yield practical results even more important than the annual State convention, with its flourishing of trumpets, extended programme and unquestioned usefulness. The small, unheralded and practically unknown gatherings of the local organization are said to have a direct bearing on the saving and making of many a dollar—taking no account of the introduction of the more genial and kindly spirit which accompanies close personal contact with the merchants of the town. This is association relationship number three.

The fourth field for getting together is within the boundaries of the individual store. This is not usually accomplished by a formal organization, and is without written constitution. There is, however, the dividing of the business into certain departments and the recognition of the leading men in the establishment who are charged with more or less definite responsibilities. A conference is held monthly, semimonthly or weekly, as may seem to be desirable, with a view to eliciting suggestions and securing the intelligent interest and help of many and sometimes all of the employees in the store. It is found in experience that the lessons in salesmanship, for example, which are given probably by the proprietor or by one of his experienced men, are suggestive and helpful, while the opportunity given to the humblest member of

the force to criticize and suggest brings out many a good idea—as for example when the boy who delivers goods proposed to make a note of the houses he saw which needed painting, so that circulars and printed matter might be sent them and perhaps more definite attention given them as prospective buyers. This is association relationship number four.

While the merchant whose experience is touched upon in the preceding paragraph is a loyal association man as regards both the national and State and local associations, he is quite frank in saying that this store association is the most useful to them all. It cultivates a spirit and an intelligence of co-operation which contributes directly to the profit making of the business. Indeed, it may, perhaps, be put down as true, without reflecting in any way on the usefulness of the State and National Association, that the individual work in one's own establishment and the closer related affiliation of all the merchants in the town is worth more in practical results than the more conspicuous and ostentatious work of the greater organizations. After all, is not one of the great benefits of the national and State associations the encouragement of detailed and practical businesslike effort in the field in which the merchant lives and in the store in which theories are tested, where the suggestions and enthusiasms of the great gathering are put into practice and their worth ascertained?

Not many merchants are permitted to attend the meetings of the National Association, which is made up of comparatively few members from the various States; the annual meetings of the State associations will soon be over, not to recur for another year; but the opportunity for work along similar lines in the community and in each store is constantly offered. In this field, the most important of all, there may be a continual and very profitable application of the association idea.

## Condition of Trade.

During the month now drawing to a close many merchants, especially in the Western States, have had their attention diverted from their usual business for a few days at least by their attendance on the annual meetings of their State associations. Meanwhile, it may be assumed that their establishments, which presumably are well ordered and in a position to run successfully in the absence of their principals, were continuing to distribute goods, thus meeting the demand, large or small, in their several communities. In some sections trade has been somewhat interfered with by the weather, and especially the unusually severe snowstorms which have prevailed in some States, and by floods which have caused some inconvenience and damage. With the advance of the season there is on the whole a gradual enlargement in the movement of Hardware. The increase in the number of orders received by manufacturers and jobbers is quite noticeable, but these orders are in many cases for limited quantities, and indicate that a conservative stocking-up process is going on, especial care being taken not to buy beyond requirements. The success which is attending the efforts of the larger interests to keep up prices on Nails and Wire, and on the staple commodities



in the line of raw material, is gratifying and tends to give the market a good degree of steadiness. There are, however, in many minor lines not a few concessions little by little being made on current orders, as prices in general show a softening tendency. It should, however, be remembered that there are many lines which stand up firmly, the manufacturers not finding any reason for changing their prices, especially as in the present condition of things a reduction would not be likely to induce purchases. A good many factories are accordingly pursuing a conservative and it might almost be called a waiting policy, as they recognize the wisdom of refraining from forcing their goods on a reluctant market, and are continuing to take care of such business as comes to them or is obtained by them without undue solicitation or material cutting of price. Meanwhile the trade is working off any surplus stocks and getting along with small and carefully assorted supplies of goods, thus making real progress toward a healthy demand when general conditions justify it. In many parts of the country, especially in farming communities, the volume of business gives little ground for complaint. A good proportion of current orders received by manufacturers and jobbers relate to goods which are for farmers' use, including such commodities as Poultry Netting, Fencing, Agricultural Tools, Handles, &c. Mechanics' Tools generally are in much less demand, but for some staple lines there is a fairly steady call. Heavy Hardware and goods used in public works and railroads are in much less request, and in these lines the market feels the existing depression much more than in the lighter and finer articles. One principal cause, indeed, of the sluggishness of business is the fact that the railroads are holding aloof under the pressure of greatly lessened business, uncertainty as to the course of legislation and the manner in which their interests will be affected by the application of legal measures for their control. Among the favorable features of the situation is the apparent soundness of commercial houses, as indicated in the few failures reported. There seems to be reason to hope that most Hardware concerns are on a safe financial basis, and that the after results of the panic will not be discerned in the serious embarrassment of Hardware merchants or manufacturers. Another exceedingly favorable feature, which has an important bearing on the future commercial and financial condition of the country as a whole is the great volume of our recent and current exports, securing the advantage of a notable trade balance, which should contribute greatly to the prosperity of the country. Collections are in most cases reported by both manufacturers and jobbers to be reasonably satisfactory, giving little ground for complaint, and the financial situation generally shows evidence of gradual and substantial improvement. Taken all in all, February has chronicled real progress in the direction of a resumption of normal conditions, and hopes are freely expressed that the year may be on the whole fairly prosperous.

#### Chicago.

Those who are inclined to contrast the present quiet state of trade with the phenomenal activity of a year ago find, of course, but little encouragement in the situation. At the same time it will be recalled how in the midst of the crowding rush of business of that period there was an ominous shaking of heads and a serious questioning of the soundness of conditions giving rise to such a demand, coupled with the prediction that it could not last. Now that the prophesied reaction has come and swung the pendulum far to the other extreme, it seems only reasonable, in the light of past experience, to expect that

it will gradually settle back to an even beat representing something nearer a healthy normal. Naturally this point will not be reached at one clean sweep, nor will it probably be approached without some temporary checks in its onward progress yet, on the whole, there will be advance instead of retrogression. What increase there may have been in the general volume of business for the past week has not been of marked proportions in any line. A fair amount of orders for staple goods are coming in, but the policy of restricting purchases to small lots for immediate consumption is being closely adhered to by all buyers. While prices in some lines show a softening tendency and in others are more or less irregular, it is indeed a source of surprise that under the pressure of protracted dullness they are not wholly demoralized. As a matter of fact, the market, as a whole, holds reasonably firm, with scarcely more fluctuation than is ordinarily seen in values at any time. Weather conditions during the greater part of the present month have not been favorable to the moving of retail stocks, and since buying for replenishment is largely of the hand to mouth order, the effect is more strongly reflected in the jobbing trade than would otherwise be the case. Many of the retail merchants, too, are now in attendance at the various State Hardware association conventions. With the opening of the coming month a better movement is looked for all along the line.

#### NOTES ON PRICES.

**Wire Nails.**—The necessity for large stocks in the hands of jobbers and retail merchants is not as imperative as last year, both on account of general trade conditions and of the prospect of prompt shipments from mills. Consequently the trade is pursuing a conservative course and not anticipating requirements to any great extent. New business and contract specifications are being received in fair volume by manufacturers, while a larger demand is looked for later in the season. The market is firm at regular prices. Quotations are unchanged, as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers.....	\$2.05
Carload lots to retail merchants.....	2.10

**New York.**—The improvement in demand which manifested itself in the early part of the present month has fallen off, and there is now little more than an assorting up of stocks. Regular prices are remarkably well maintained considering the comparatively limited demand. The local quotation for small lots at store is \$2.40.

**Chicago.**—Both in new business and specifications against contracts business continues to come forward in reasonably good volume. Due to changed conditions, both as respects consumptive demand and more especially the present availability of prompt shipments, dealers are not providing for their wants as far ahead as was the case last year. At the same time there seems to be a great deal of confidence in the development of a good consumptive demand when the season is fairly open. Prices continue firm at regular quotations. Quotations are as follows: \$2.23 in car lots to jobbers, and \$2.28 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

**Pittsburgh.**—A fair amount of new tonnage is being placed with the mills, while specifications against contracts are being received at a satisfactory rate. However, the trade is not anticipating its requirements as far ahead as last year, being inclined to pursue a conservative course in the matter of carrying stocks. There is no doubt but that the action of the mills early in January in practically guaranteeing prices on Wire Nails against decline, has resulted in a much larger volume of business than otherwise would have been the case. The tone of the market is firm, and we are advised that regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads, to jobbers.....	\$2.05
Carload lots to retail merchants.....	2.10

**Cut Nails.**—Market conditions have not shown much improvement since the reaffirming of prices by the Cut Nail Association. A comparatively small volume of business is being placed with mills, and concessions from regular quotations are frequently made. Regular quotations are on the basis of \$2.05 per keg, at mill. Iron Nails generally should command about 10 cents more than Steel.

**New York.**—The local situation is similar to that in Wire Nails, though more pronounced. There appears to be little work under way, which requires the use of Cut Nails. Quotations are on the basis of \$2.30 per keg for small lots, at store.

**Chicago.**—The demand for Cut Nails continues very light, and jobbers' stocks are moving slowly. It is becoming evident that prices are not being maintained in the face of offered business. One firm offers on even small lots 10 cents per keg below the regular price. There is, however, no disposition to tempt trade by open quotations at cut prices. Chicago quotations are as follows: Iron Cut Nails, carloads, to jobbers, \$2.38; to retailers, \$2.43; Steel, to jobbers, in carloads, \$2.28; to retailers, \$2.33.

**Pittsburgh.**—The fact that the Cut Nail mills at their recent meeting reaffirmed prices, has not as yet stimulated demand to any extent, which continues light and for small lots. Hardly enough new business is being offered to test the market, but prices are still being shaded to some extent on most of the few orders that are being placed. We quote Steel Cut Nails at \$2 to \$2.05, f.o.b. Pittsburgh, for carload lots, and small lots at \$2.10, to which freight to destination is added. Iron Cut Nails are being held at about \$2.15, at mill.

**Barb Wire.**—There is a gradual increase in the tonnage being shipped from mills, and this is expected to grow larger with the addition of new business from the West and Northwest. Mills are able to make fairly prompt shipments, and prices remain firm, and without change. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots.....	\$2.20	\$2.50
Retailers, carload lots.....	2.25	2.55
Retailers, less than carload lots.....	2.35	2.65

**Chicago.**—It is expected that the present fairly active demand from the South will soon be reinforced by a greater volume from the West and Northwest. Shipments are gradually growing heavier, and by the time spring opens they bid fair to become nearly normal. Prices continue firm, without change. We quote as follows: Jobbers, Chicago, car lots, Painted, \$2.38; Galvanized, \$2.68; to retailers, car lots, Painted, \$2.43; Galvanized, \$2.73; retailers, less than car lots, Painted, \$2.55; Galvanized, \$2.85; Staples, Bright, in car lots, \$2.35; Galvanized, \$2.65; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

**Pittsburgh.**—Only a fair amount of new tonnage is being placed, the trade not being disposed to buy as heavily as at this time last year. Shipments by the mills are fairly heavy, and they are able to make quite prompt deliveries. The market is firm, our advices being that prices are absolutely maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Gal.
Jobbers, carload lots.....	\$2.20	\$2.50
Retailers, carload lots.....	2.25	2.55
Retailers, less than carload lots.....	2.35	2.65

**Plain Wire.**—The feeling that the consumptive demand will not be as heavy as it was last year is leading the trade to purchase in a conservative manner, and not to anticipate requirements as far ahead. The market is well maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carload lots.....	\$1.90
Retailers, carload lots.....	1.95

**Chicago.**—The outlook for a reasonably satisfactory Fence trade is far from discouraging, and Fence manufacturers are, in consequence, making preparations in a

conservative way to supply it. They are placing some new business and are specifying with a fair degree of liberality against contracts. Mill shipments are increasing and show marked improvement over those of recent months. Quotations are as follows: In car lots, to jobbers, \$2.08, f.o.b. Chicago, and to retailers, \$2.15.

**Pittsburgh.**—New demand for Plain Wire from Fence manufacturers is heavier now than at any time since last fall. The trade is not anticipating its requirements as far ahead as at this time last year, and is not buying as heavily, believing that consumption will be less than it was last year, which was an exceptionally good year in all branches of the Wire trade. We are advised that regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carload lots.....	\$1.90
Retailers, carload lots.....	1.95

**Chisels.**—The Chisel market gives evidence of more or less irregularity, and some comparatively low prices are being announced.

**Twist Drills.**—The manufacturers of Twist Drills have been in conference and are taking under consideration the desirability of revising the list prices, with a view to correcting inequalities.

**Carriage Bolts, Nuts, &c.**—There seems to be a disposition among the manufacturers of Carriage Bolts, Nuts, &c., to check the tendency toward lower prices which has characterized the market for the past month or two. As a result some higher prices than those recently obtainable have been announced, and other quotations are being withdrawn.

**Copper Products.**—There has been within the past week a further recession in the price of Copper Products generally, including Brass and Copper Tubing, Sheets, Rods, Wire, Copper Rivets and Burrs, Soldering Irons, &c.

**Double Pointed Tacks.**—Competition between manufacturers and the existing indisposition of the trade to purchase freely has led to the announcement of lower prices on Double Pointed Tacks, the market on which is referred to as in a rather unsatisfactory condition.

**Tacks.**—Manufacturers are endeavoring to correct the tendency toward irregular and lower quotations which has characterized the Tack market during the past few weeks. It remains to be seen what success will attend their efforts.

**Heavy Strap and T Hinges.**—The manufacturers of Strap and T Hinges adopted on February 10 new list prices on Heavy Strap and Extra Heavy T Hinges, quoting all sizes per dozen pairs instead of per pound. Inasmuch as the list prices given below are based upon the average weight and the discounts continue unchanged, the net is about as heretofore. The revised list as given below is subject to the following base discounts, Heavy Strap, 60 and 5 per cent.; Extra Heavy T, 50 and 10 per cent., with additional discounts of about 10 and 7½ per cent.:

*Heavy Strap.—Per Doz. Prs.*

	Inch.	4	5	6	8	10	12	14	16
Plain Steel.....	1.60	2.15	2.80	4.50	6.80	10.40	12.20	14.00	
Japanned .....	1.75	2.35	3.10	4.95	7.50	11.45	13.40	15.40	
Galvanized .....	2.85	4.25	6.40	10.25	15.50	23.50	25.70	29.50	
Galv. Brass Pin..	3.30	5.00	7.80	12.35	19.00	27.50	30.40	34.30	

*Extra Heavy T.—Per Doz. Prs.*

	Inch.	4	5	6	8	10	12	14	16
Plain Steel.....	1.80	2.45	3.00	5.00	7.40	10.70	11.80	12.60	
Japanned .....	2.00	2.70	3.30	5.50	8.15	11.75	13.00	13.85	
Galvanized .....	3.20	4.65	6.00	10.00	14.25	21.20	23.00	24.50	
Galv. Brass Pin..	3.90	6.00	8.50	13.50	19.00	28.00	30.00	31.50	

*Corrugated Heavy Strap.—Per Doz. Prs.*

	Inch.	4	5	6	8	10	12
Plain Steel.....	1.60	2.15	2.80	4.50	6.80	10.40	
Japanned .....	1.75	2.35	3.10	4.95	7.50	11.45	
Galvanized .....	2.85	4.25	6.40	10.25	15.50	23.50	
Galvanized, Brass Pin..	3.30	5.00	7.80	12.35	19.00	27.50	

*Corrugated Extra Heavy T.—Per Doz. Prs.*

	Inch.	4	5	6	8	10
Plain Steel.....	1.80	2.45	3.00	5.00	7.40	
Japanned .....	2.00	2.70	3.30	5.50	8.15	
Galvanized .....	3.20	4.65	6.00	10.00	14.25	
Galvanized, Brass Pin..	3.90	6.00	8.50	13.50	19.00	



**Rope.**—Business continues moderate in volume, with expectations of an improved demand later in the season. Prices are somewhat irregular, and to some extent depend upon the anxiety of sellers to exchange stocks for available funds. An impression prevails among some in the trade that Fiber values will continue to decline, resulting in correspondingly lower prices for Cordage. This idea is based on the assumption that prices for raw material has been too high for some time. The following quotations, for base sizes, fairly represent the market: Pure Manila, 11 to 11½ cents; B quality grades down to 8 to 9½ cents; Pure Sisal, 7¼ to 8 cents; lower grades Sisal, 6¾ to 7 cents; No. 1 Jute, ¼-in. and up, 7½ cents; No. 2 Jute, 7 cents.

**Window Glass.**—The addition to the number of Window Glass factories which have been in operation is the only feature of special interest in the situation. Recently there seems to have been no regular factory price, each manufacturer making quotations according to his necessity for cash. Local demand is exceedingly light. The minimum prices recommended by the Eastern Window Glass Jobbers' Association are as follows: Single strength, 90 and 25 per cent.; double strength, 90 and 30 per cent. discount from jobbers' list. These prices are, however, not closely adhered to.

**Linseed Oil.**—The impression prevails in the minds of some in the trade that stocks of Oil in the hands of consumers and merchants are low throughout the entire country, and that this is also true of the crushers. Upon this basis it is reasoned that a good spring demand would possibly sustain present quotations and that it might cause a slight advance. A more general belief appears to be that prices will be lower. Demand in this market is confined to small lots. Local quotations are as follows: In five-barrel lots, State and Western Raw, 41 to 42 cents; City Raw, 43 to 44 cents per gallon. Boiled Oil is 1 cent per gallon advance on Raw.

**Spirits Turpentine.**—Light receipts and a better demand at Southern points has strengthened the local market. Demand from manufacturing consumers is light, as the result of general trade conditions, and requirements are only for current needs. The market is more steady and prices a little higher. The New York market is represented by the following quotations: Oil Barrels, 51 to 51½ cents; Machine Made Barrels, 51½ to 52 cents.

## OHIO HARDWARE ASSOCIATION.

(By Telegraph.)

THE fourteenth annual convention of the Ohio Hardware Association is now in session in Columbus. While it is impossible thus early to make an accurate estimate of the attendance, it is safe to say that in point of numbers as in other respects, this convention marks the highest point yet attained in this or any similar organization. Officers and members are filled with enthusiasm, especially the former, whose untiring efforts have been crowned with such substantial success.

The public accommodations of the capital city, which have been ample on previous occasions, have to-night proved inadequate to meet the demands made upon them, but the Committee of Arrangements, never unprepared, has met the exigency by producing a list of rooms which can be had in boarding and private houses.

The Hardware show is pronounced to be the most effective and elaborate that has ever been held, the scheme of uniformity in the design and decoration of the booths being an emphatic success, not only in enhancing the beauty of the general effect, but especially in its convenience and economy for the exhibitors, of whom there are over 150.

In spite of a heavy rain the opening session this afternoon was said to be the largest ever held by the association, completely filling the spacious auditorium. It was naturally an occasion of enthusiasm, congratulation and reminiscence, but considerable time was also given to business discussions suggested by the question box. This evening there is a theater party, the entire house being reserved for the Hardware men, their ladies and guests.

## The Marshall Pure Paint Law.

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, D. C., February 25, 1908.

AN important measure has been introduced in the House of Representatives by Congressman Marshall of North Dakota, designed as the basis for a federal pure Paint law. The bill differs widely, both in form and substance, from the only measure ever before presented in Congress dealing with the same subject, and which was also introduced by Mr. Marshall in the closing days of the last Congress. The original bill, which was admittedly crude in form and drastic in effect, followed closely the lines of the national pure food and drug law and prohibited the interstate transportation of Paints composed of any materials other than pure linseed oil, carbonate of lead, oxide of zinc, turpentine, Japan dryer and pure colors. This category of favored ingredients was taken from the text of the North Dakota law, which requires Paints containing any other ingredients to be so labeled as to show the kind and percentage of raw materials used. It will be noted that while the North Dakota law discriminates against Paints containing other than the six statutory ingredients to the extent of requiring them to be labeled, the original Marshall bill, as introduced in the last Congress, absolutely forbade the interstate transportation of Paints which under the State law could have been freely transported, bought and sold if appropriately marked.

### Result of Conference.

During the last Congressional recess Mr. Marshall received many representations from prominent Paint manufacturers, dealers and others regarding the proper scope of federal Paint legislation, and early in the present Congress he held conferences with representatives of the National Paint, Oil and Varnish Association, the International Association of Master House Painters and Decorators and other trade organizations, as the result of which he decided that the proper function of a national pure Paint law was to require all articles sold as Paints to be plainly labeled so as to disclose their exact character, and especially the quantity and proportion of each ingredient employed. He also decided that certain forms of mislabeling might properly be treated as adulteration for the purpose of a federal law. Upon this basis he has drawn the comprehensive bill just introduced.

The jurisdiction of the Federal Government over this subject is twofold: First, with regard to interstate shipments, which it controls absolutely under the interstate commerce provisions of the Constitution, and, second, concerning the manufacture and sale within the Territories, the District of Columbia and the insular possessions of the United States, over all of which Congress exercises the same police powers as are exercised in the States by their respective legislatures. The first section of the bill, which is based upon the police powers of the Federal Government, makes it unlawful for any person to manufacture within any Territory any Paint, Turpentine or Linseed Oil which is adulterated or unlabeled within the meaning of the act, and violation of this provision is made punishable by fine or imprisonment, or both, with increased penalties for subsequent convictions.

The terms of section 2 are important in that they constitute the chief prohibition embodied in the measure and deal with the entire subject of interstate transportation. This section is as follows:

Sec. 2. That the introduction into any State or Territory or the District of Columbia from any other State or Territory or the District of Columbia, or from any foreign country, or shipment to any foreign country of any Paint, Turpentine and Linseed Oil which is adulterated or unlabeled, within the meaning of this act, is hereby prohibited; and any person who shall ship or deliver for shipment from any State or Territory or the District of Columbia to any other State or Territory or the District of Columbia, or to a foreign country, or who shall receive in any State or Territory or the District of Columbia from any other State or Territory or the District of Columbia, or foreign country, and having so received, shall deliver, in original unbroken packages, for pay or otherwise, or offer to deliver to

any other person, any such article so adulterated or unlabeled within the meaning of this act, or any person who shall sell or offer for sale in the District of Columbia or the Territories of the United States any such adulterated or unlabeled articles, or export or offer to export the same to any foreign country, shall be guilty of a misdemeanor, and for such offense be fined not exceeding two hundred dollars for the first offense, and upon conviction for each subsequent offense not exceeding three hundred dollars, or be imprisoned not exceeding one year, or both, in the discretion of the court;

Provided, That any Paint, Turpentine and Linseed Oil shall not be deemed adulterated or require to be labeled within the provisions of this act when intended for exportation to foreign countries and when not in conflict with the laws of the foreign country to which intended to be shipped, but if any of said articles shall in fact be sold or offered for sale for domestic use or consumption, then this proviso shall not operate as an exemption from any of the other provisions of this act.

And provided further, That nothing in this act shall prohibit a manufacturer of Paint, Turpentine or Linseed Oil to sell upon a written contract, to a consumer, for use only on products of his own manufacture goods unlabeled as to their ingredients, but bearing conspicuously the printed statement that they are made in accordance with a private formula; provided that no Paint, Turpentine or Linseed Oil, made in accordance with a private formula, under a written contract, shall be sold by the consignee or used upon any buildings.

#### Board for Making Rules and Regulations.

By the third section of the bill a board is constituted, composed of the Secretaries of the Treasury, Agriculture, and Commerce and Labor, to make uniform rules and regulations for carrying out the provisions of the act, including the collection and examination of Paint, Turpentine and Linseed Oil manufactured or offered for sale in any Territory over which the United States has jurisdiction or which shall be offered for sale in unbroken packages in any State other than that in which they shall have been respectively manufactured or produced, or which shall be received from any foreign country or intended for shipment to any foreign country.

#### Examination and Hearings.

Section 4 outlines the procedure for the examination of specimens and for hearings to be granted to manufacturers whose goods may be called into question. This important feature of the law is as follows:

Sec. 4. That the examinations of such specimens shall be made in the Bureau of Chemistry of the Department of Agriculture, or under the direction and supervision of such bureau, for the purpose of determining from such examinations whether such articles are adulterated or misbranded within the meaning of this act; and if it shall appear from any such examination that any of such specimens is adulterated or improperly labeled, within the meaning of this act, the Secretary of Agriculture shall cause notice thereof to be given to the party from whom such sample was obtained. And any party so notified shall be given an opportunity to be heard, under such rules and regulations as may be prescribed as aforesaid, and if it appears that any of the provisions of this act have been violated by such party, then the Secretary of Agriculture shall at once certify the facts to the proper United States district attorney, with a copy of the results of the analysis or the examination of such article duly authenticated by the analyst or officer making such examination, under the oath of such officer. After judgment of the court, notice shall be given by publication in such manner as may be prescribed by the rules and regulations aforesaid.

By the terms of section 5 it is made the duty of each district attorney to whom the Secretary of Agriculture shall report any violation of this act to cause appropriate proceeding to be commenced and prosecuted in the proper courts of the United States for the enforcement of the penalties by law provided.

#### Definitions.

Sections 6, 7 and 8 contain the definitions laid down in the act and prescribe the character of the labels to be used on all Paints eligible to interstate transportation. The text of these sections is as follows:

Sec. 6. The term "Paint" as used in this act shall include all pigments, dry or in any kind of Oil, or any substance or compound used or intended for use in Paint, paste or semipaste Paint, and liquid or mixed Paint ready for use. The product "Linseed Oil" is defined to be the Oil obtained from the seeds of the flax plant, *Linum Usitatissimum* L. The product "Turpentine" is defined to be the light Oil obtained from coniferous trees.

Sec. 7. That for the purpose of this act an article shall be deemed to be adulterated.

a. If any substance be present, other than those mentioned on the label, which cheapens or debases its character or increases its weight or volume without a corresponding increase in value.

b. If any of the materials contained in the article be of inferior quality.

c. If any substance has been substituted, in whole or in part, for any ingredient claimed to be present.

Sec. 8. There shall be shown clearly and distinctly upon the face label and in the English language:

a. The name and residence of the manufacturer of the Paint, or of the distributor thereof, or of the party for whom the same is manufactured.

b. There shall be shown in case of Dry Colors, Colors ground in oil, Paste or Semi-Paste Paint, the true net weight; and in all ready-mixed or ready-for-use Paints the true measure in gallons or part thereof.

c. There shall be shown the name, and, with substantial accuracy, the percentage of each ingredient, both solid and liquid, contained therein.

d. When other than chemically pure Colors are used the percentage composition thereof shall also be shown, or when Varnish, Japan or other driers are used, the composition of the same shall be shown.

That for the purposes of this act an article shall be deemed to be improperly labeled:

First. If it be an imitation of or offered for sale under the name of another article.

Second. If the contents of the package as originally put up shall have been removed, in whole or in part, and other contents shall have been placed in such package, or if the package fails to bear a statement on the label of the quantity or proportion of each ingredient contained therein.

Third. If in package form, and the contents are not stated plainly and correctly in terms of net weight or measure on the outside of the package.

Fourth. If the package containing it or its label shall bear any statement, design or device, regarding the ingredients or the substances contained therein, which statement, design or device shall be false or misleading in any particular.

#### An Important Feature of the Proposed Law Is Embodied

in section 9, which exempts from prosecution any dealer "when he can establish a guaranty signed, by the wholesaler, jobber, manufacturer or other party residing in the United States from whom he purchases such article, to the effect that the same is not adulterated or improperly labeled within the meaning of this act." Such guaranty to afford protection must contain the name and address of the party or parties making the sale of the articles to the dealer, and such parties are thereby made amenable to the prosecutions, fines and other penalties which otherwise would attach to the dealer.

#### Seizure and Forfeiture.

Section 10 of the bill should have the very careful attention of all dealers, for the reason that it subjects improperly labeled Paints to seizure and forfeiture; notwithstanding the fact that the dealer in whose possession they are found may have taken every possible precaution to determine the legitimate character of the products purchased by him. This provision of the bill follows closely a similar feature of the national pure food and drug law, the validity of which is now being tested in the courts. It is obvious that if the Paint bill should become a law with this provision embodied therein dealers would be obliged to protect themselves by securing special guarantees from manufacturers or jobbers in addition to those provided in section 9 above quoted. Section 10 of the bill is as follows:

Sec. 10. That any Paint, Turpentine or Linseed Oil that is adulterated or improperly labeled within the meaning of this act, and is being transported from one State, Territory, District or insular possession to another for sale, or, having been transported, remains unloaded, unsold or in original unbroken packages, or if it be sold or offered for sale in the District of Columbia, or the Territories, or insular possessions of the United States, or if it be imported from a foreign country for sale, or if it is intended for export to a foreign country, shall be liable to be proceeded against in any district court of the United States within the district where the same is found, and seized for confiscation by a process of libel for condemnation. And if such article is condemned as being adulterated or improperly labeled within the meaning of this act, the same shall be disposed of by destruction or sale, as the said court may direct, and the proceeds thereof, if sold, less the legal costs and charges, shall be paid into the Treasury of the United States, but such goods shall not be sold in any jurisdiction contrary to the provisions of this act or the laws of that jurisdiction.

Provided, however, that upon the payment of the costs of such libel proceedings and the execution and delivery of good and sufficient bond to the effect that such articles shall not be sold or otherwise disposed of contrary to the provisions of this act or the laws or any State, Territory, District, or insular possession, the court may by order direct that such articles be delivered to the owner thereof. The proceedings of such libel cases shall conform, as near as may be, to the proceedings in admiralty, except that either party may demand trial by jury of any issue of fact joined in any such case, and all such proceedings shall be at the suit of and in the name of the United States.

Under the terms of section 11 the Secretary of the Treasury, upon the request of the Secretary of Agriculture, may at any time take samples from importations of



Paint, Turpentine and Linseed Oil, and if such goods are found to be adulterated or misbranded within the meaning of the law their delivery to the consignee may be forbidden and their re-exportation required.

Section 12 defines the term "Territory" to include the insular possessions of the United States, and the word "person" to include corporations, companies, societies and associations. By the terms of section 13 the proposed law becomes effective six months from the date of its passage and approval.

#### Offered as a Basis for Legislation.

This measure has been referred to the House Committee on Interstate and Foreign Commerce, to which

Mr. Marshall intends to apply at an early date for a series of hearings. He desires it understood that his bill, which has the approval of the Paint experts who were instrumental in securing the enactment of the North Dakota law, and of Prof. H. W. Wiley, Chief of the Bureau of Chemistry of the Department of Agriculture, is not put forward as a perfected measure, the provisions of which he is disposed to insist upon, but is offered merely as a basis for legislation. Manufacturers and dealers who desire to make representations to the House committee before the bill is acted upon will have ample opportunity to do so, and advance notice of such hearings will be given in this correspondence.

## West Virginia Retail Hardware Association.

**A**LTHOUGH still in the swaddling clothes' division among State retail Hardware organizations, West Virginia has much cause for felicitation anent the second annual convention, which was held at Elkins, February 18, 19 and 20. The men of Hardware received a right royal welcome through the hospitable mayor, Dr. A. M. Fredlock, who in his opening address made some happy hits on the profession and qualified the conventional key of open sesame by denominating his a "pass key" which would not be needed because the "latch string" was always out for the association members. The headquarters were at the Hotel Randolph, where a number of manufacturers and jobbers had comprehensive exhibits. A feature of the meeting was the friendly exchange of ideas and the hearty co-operation of the traveling salesmen whom President-elect Frye organized into "a boosting division," each salesman a committee of one to bring in two or more new members during the coming year. The active membership is now nearly 100, with about 50 honorary members, traveling salesmen. The funds are in fine condition through the conservative management of Secretary-Treasurer Leslie Hawker, whose salary was doubled in recognition of his efforts.

#### Convention Committees.

The president appointed the following committees to act during the convention:

**NOMINATIONS:** C. S. Davis, Oakland, Md.; E. C. Linger, Elkins; W. J. Corrick, Parsons.  
**AUDITING:** A. J. Hess, Mannington; J. M. Walker, Wellsburg; W. A. Vance, Clarksburg.  
**RESOLUTIONS:** C. D. Barbe, Morgantown; F. R. Clelland, Fairmont; T. B. Frye, Keyser.

#### The President's Address.

President C. D. Kyle in his annual address made a strong plea for the utilization in daily business life of those qualities which could best be summarized in the simple and homely phrase "Live and let live." He advocated friendly and social intercourse among competitors. Taking the thought "buying together," he made the point that by bunching small local shipments merchants could frequently save one-half the freight, especially in car-load lots. He deprecated the practice of attacking rival firms in advertisements, slurring competitors to visiting salesmen, using unfair methods to get trade away from other merchants. Among "don'ts" relative to the retail business, Mr. Kyle enumerated the following:

Don't try to buy the same brands your competitor carries—get something different and possibly better.

Don't be constantly worrying yourself for a basis upon which to cut your competitor's price on an article.

Don't allow your vanity to run away with your business sense by overbuying in order to make somebody believe you're the biggest merchant.

#### Parcel Post.

President Kyle then took up the Parcel Post question, which he ably discussed at some length, pointing out the objections and disadvantages connected with it. Concluding his argument, he said:

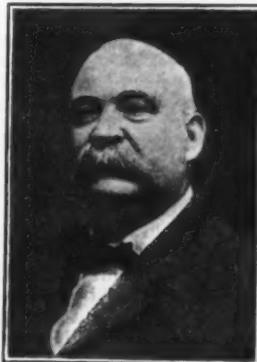
It may be well to ask, Who is it who has petitioned for the parcel post mail? It is not the farmer, for he has never petitioned for anything. It is not the people as a whole, they would be asking for a favor to a small class, and which would be directly against their own in-

terests. Certainly no such petition has gone in from the country merchants or the retail trade, or the country in general. It comes down to the fact then, that the parcel post would benefit nobody but the mail order or the catalogue houses, many of whom are doing business on a basis of misrepresentation. And whatever would go to the benefit of the catalogue houses would react in direct ratio against the best interests of the farmers and decidedly against the interests of the country merchant. The parcel post is a direct threat against the welfare of the country towns.

#### Secretary Hawker's Report.

Leslie Hawker presented an interesting and suggestive report as secretary, from which we make the following extracts:

Complaints have been very few the past year and we believe all that have been reported have been adjusted satisfactorily to the complaining party. However, we believe the greatest menace that confronts the retailer in most localities and one which has frequently been called



T. B. FRYE.



C. D. KYLE.

to our notice in an informal way, although not in the form of a complaint, is the practice of many of the local jobbers selling general stores, grocery stores or to consumers direct. Many of these jobbers are refused membership in the National Hardware Association, yet they secure jobbers' prices on a great many articles which the retailers cannot do, thus giving them an advantage, which many of them use to the detriment of legitimate retail merchants. If such sales were confined to goods that were to be resold it would be a different proposition, but many times the goods pass from the jobber direct to the consumer and are billed to some one in business, but not handled by him at all, and little if any profit is added, thus placing the wholesale price in the hands of the consumer.

We are sorry to say that this happens many times when the jobber has full knowledge of the affair. We consider this a serious question and one the convention should carefully consider. We have no suggestions to make, but believe it should be the policy of the association to refrain from any action that would savor of a boycott.

#### Members Taking Up Mutual Insurance.

We are gratified to note that some of our members are laying aside their spurious objections and prejudices to mutual insurance and are availing themselves of the advantages it offers to members of associations, and we believe this will be a means of stimulating interest and membership in the association. A year ago we had but

one or two members carrying mutual insurance, while to-day we have a number, and others are expecting to take out mutual insurance when their present old line policies expire.

That much good has been accomplished by the various associations is undisputed, but there remains yet a great work to be done. The best interests of the retailer demand that the parcel post measure now before Congress shall be defeated, and that 1-cent letter postage be instituted instead. Unscrupulous jobbers should be restricted either in buying or in their selling, and numerous other matters demand our attention in the near future. These improved conditions can be obtained only if at all by a large earnest and enthusiastic membership, not only willing to accept benefits and conditions already secured, but one that will co-operate and assist in demanding that their interests be protected. Then does it not behoove every member of this association to



W. A. VANCE.



F. R. CLELLAND.

prosecute more vigorously our campaign for new members for "United we stand, divided we fall."

Our increase in membership the last year has not been what it might have been, nor what your secretary really expected, yet we can show a liberal increase from 44 regular members last year to 61 regular and 33 honorary members to-day, and we believe the interest and appreciation of the association is more than keeping pace with the increase in membership. We have a possible membership of about 250 regular members in the State and adjacent territory, while we now have only 61 merchants associated with the organization. We therefore suggest that you designate or appoint some one as a solicitor to visit the various merchants of the State who are not already members of the association and explain the policy of association to them carefully, and believe that in this manner we would have a membership of 150 before next meeting.

We are also of the opinion that we should have a committee on legislation, whose duty it would be to correspond with other commercial bodies and ascertain what they are doing or have done, and to agitate and assist in developing legislation that would be of interest and advantage to the association and retail merchants. It might be well to empower them to secure legal advice at their discretion and to report to the next meeting of this association the advisability of incorporating this association.

#### Col. Morris Belknap's Address.

The afternoon session of the second day was opened by Col. Morris Belknap of the Belknap Hardware & Mfg. Company, Louisville, Ky., who discussed "Claims: Their Justification and Abuse, and the Best Methods of Handling." Colonel Belknap prefaced his talk with a cordial invitation to members to stop over in Louisville en route to the national convention in St. Louis in March, and visit the company's establishment.

Mr. Belknap called attention to the increased expense incurred in the treatment of claims due to the way in which they were often presented. A reduction of this expense would be effected if the claimant would supply the seller with the following information:

1. Date of invoice.
2. Item.
3. Amount involved.
4. Nature of claim.
5. Error and responsibility.
6. Proposed disposition and settlement.

Inasmuch as these points are applicable to the claims made in any branch of business, there is good reason to urge merchants to adopt a regular form of claim sheet,

with proper space left for each one of these questions. This would suggest to the buyer the necessity for filling them all in and giving the seller the necessary information that he wants for the adjustment of the claim. "There should be as much uniformity observed in writing out a claim as in writing a check," said Mr. Belknap. The speaker then reviewed the great difficulty which any adjuster experiences in answering some dozen or two assorted letters in regard to claims and saying the right thing to each correspondent, and urged that all claims should be made with a cool, dispassionate statement of the facts and free from any display of temper, which so often jeopardizes a valuable business connection.

#### Losses in Transit.

In regard to losses in transit Mr. Belknap spoke as follows:

I now come to perhaps the most complicated of all claims and one requiring the co-operation of the buyer and seller. I refer to losses in transit, which in the past few years have undoubtedly been very large. Some of these we as jobbers have been responsible for. The added cost of packing has induced us to economize in the matter of boxes, possibly to an unwise extent, and the strength of the package has not been sufficient to deliver the contents to the consignee in first-class order. But there is not a well ordered house in the country that has not this subject seriously under consideration. This brings us to the subject of

#### Goods That Are Abstracted in Transit.

So expert have become the thieves in opening boxes and extracting therefrom whatever they can lay their hands on, it is very difficult for a merchant upon receipt to convince himself that the goods were not left out at point of shipment. A good deal of this work is evidently done by men who are expert packers and know how to replace the straw and excelsior in the boxes which they have opened so as not to excite suspicion. When the goods arrive at destination perhaps a cleat nailed across the corner may be the only thing to suggest that the box might have been tampered with.

As many houses, when they find they have packed goods in a weak box, adopt this method of reinforcing it, it is not improbable the customer would think it is in its original shape. The use of coated nails, soldered bands and other protective measures, while all good in their way, do not completely secure them, and there needs to grow up in the business community a determination to



MORRIS B. BELKNAP.



LESLIE HAWKER.

prosecute to the limit of the law any men that are captured in this nefarious practice. A small assessment on various associations of the mercantile world to prosecute and land in the penitentiary railroad thieves would be a good investment.

It is very difficult to induce the buyer to believe that in spite of the checks and counterchecks, the extracted goods have been actually put in the box, and of course the seller from his knowledge of the way goods are very often unpacked at destination, realizes that the chances for abstraction there are not at the minimum. After he has seen a clerk in a country store start to unpack a box. He has no sooner ripped off the top and removed the packing material than a customer comes in, calling him perhaps to go down into the cellar or out into a warehouse to get some trifling article. During all that time the box lies subject to the depredations of whoever can lay his hands on any of the contents. This picture comes up before the adjuster as he reads the letter which hints in no unmistakable terms to him that the house must have some very dishonest men in its own employ.



Certain developments have proved beyond a question that the amount of thievery in transit has been far in excess of what we conceived. Train crews have been known to stop whole freight trains in deserted parts of the country, and to some farm house in the neighborhood carried off the contents of cases that they have opened as the train approached the robbers' den. We shudder to think of all the claims that have been based upon such proceedings. There is but one adequate remedy, and that is the severest sort of punishment.

#### Another Class of Claims

The speaker next called attention to the class of claims arising from an effort on the part of buyer and seller to get together on a line of goods, so as to have them sell at a certain price, and in doing so sacrificing the quality beyond what is justifiable. Undoubtedly much material furnished to the trade proves unsatisfactory, and forms the basis of a claim, where the seller finds out his mistake. There should be really in this class of cases no claim, for the matter was fully understood between buyer and seller, and yet such transactions are frequently the source of some of the most bitterly fought claims.

#### Mr. Bogardus on Systematic Business Methods.

A very practical and suggestive address was made by W. P. Bogardus, Mt. Vernon, Ohio, former president of the National Association. Mr. Bogardus was warmly received by the members and spoke as follows, in part:

The natural tendency in all of us is to take life easy. There are very few people who go into business simply for the sake of being in business. To earn a living and to make money that will enable us to purchase the things we desire, are the prime motives for undertaking the work that is necessary to do in order to carry on a successful business.

Some men measure success by the amount of money they make; some by the amount of goods they handle, regardless of profit; others by the amount of ease they have as they pass through life. This latter class are content to buy a stock of goods and then sit down and wait for customers to come in and buy. They are satisfied with the meager results of a bare living.

#### But Success Should Mean More

than all these. The ability to get good profits, to build up a large business and to inaugurate a thorough system, together with the will and ability to be helpful to others, makes a combination that to me is the ideal American business man. With the increased competition and the smaller profits in business, we have been compelled to change from the loose methods of the past to a more exact system, that we might better know our true condition.

And the basis of all our knowledge of our business must come through the yearly invoice. We cannot tell what we have until we take an inventory. When we add the amount of our sales for the year to the inventory and subtract from that the last year's inventory added to the amount of purchases for the year, we have our gross profit. But this will not be all. We will want to know where our profit is.

#### An Illustration.

For example, suppose we have \$10,000 to be used in business. To have that on interest would bring us, say \$600, without taking much of our time. Suppose we put in our time at \$1200 per year. That would give us \$1800 for our money and time for the year.

Now suppose we put that \$10,000 in business, and we sell, say, \$25,000 worth of goods. If we net a 10 per cent. profit on our sales we have \$2500. The difference between this last amount and the \$1800 that we received from selling our time and the interest on the \$10,000 is \$700. That should be money in bank or in some investment we know about.

How many of us can show at the end of the year the net profits of our business in money? If we cannot, where has it gone to? Have we made our invoice too high, or have we failed to keep our records straight? It is results we are after when we go into business.

#### If Our Business Is Not Paying.

the sooner we know it the sooner we can get into something else that we hope will pay. To continue in a losing business means ultimate ruin. When we buy goods we are careful to get the goods that we think will suit our trade. When we get them marked and on our shelves, we use all our endeavors to get the public to come and patronize us. And when we get the money for the goods, we toss it into a drawer and at night gather it up and put it in our pocket or safe, and consider the matter closed.

If we have clerks we do not know whether we are getting all we should have or not. Mark you, I do not want to say that clerks are dishonest, for I do not believe that there is one in a hundred that is dishonest. But what I want to say is that perhaps mistakes have been made in making change during the day, as we are all liable to do. How are you going to tell who is at fault?

#### If You Have No System

it is impossible to tell. And the lesson that should come from every mistake is lost, because the mistake cannot be brought home to the one who made it. It is a general fact that on such a day a mistake was made, but who made it does not appear. Each one in the store will say, "I did not make it," and so the guilty one, unconscious of his shortcomings, continues his careless methods, to the injury of the business.

Perhaps the proprietor of the store has made the mistake; he is not proof against making them. It would be a great comfort to the clerks to know it if he had, and it would help the proprietor to be more merciful in his criticism of the clerks. It is easy for the proprietor to go to the money drawer and take some money out and forget about it, and with the ordinary money drawer it is impossible to detect the shortage.

So it seems to me that we should devise some method so that when money is put in the drawer a record is made, and when it is taken out a further record is made of the transaction. Then if mistakes are made they can be detected. But even with this arrangement you cannot place the blame on the person who made it.

#### The Final Solution of This Question

comes when each clerk has a drawer of his own. Then if his account does not show up right at the close of business the blame can be placed where it belongs. The knowledge that mistakes will be discovered will have a tendency to make all connected with the store more careful. Do not imagine for a moment that any system will make honest employees. Honesty is inbred. But precautions will help sometimes to brace some sorely tempted employee, and it is the duty of every employer to help those in his employ to be good, honest and upright.

#### A Simple Method.

I saw a simple method the other day that was inexpensive, and still answered the purpose—a money drawer with a desk top setting on the counter. In the top of the desk was an opening possibly 6 in. square covered with plate glass, with a slot in the glass running across the opening  $\frac{1}{2}$  in. wide. Under the glass was a roll of paper that moved forward a space every time the drawer was opened. The paper was divided into columns of cash, charge, received on account and paid out. Every transaction in the store was recorded through the slot on the paper.

At the close of business for the day the proprietor opens the drawer and takes from the roll as much of the paper as has been used, and has a complete record of the day's business. From this paper he posts into his ledger the record of the day, and puts aside the paper as his original entry of the various charges made. To those who hesitate because of the expense, some cheap method like I have just described can be inaugurated.

#### Modern Methods of Bookkeeping Tend Toward as Little Recopying

as possible. I have found a day book ledger very satisfactory. The debit side of the ledger is wide, so that several items can be entered on one line. Then when an itemized account is called for there is but one book to look over. The slips from the register are used to verify the account, and are preserved as the original entries in case a dispute should arise over an account. With such a simplified system the danger from mistakes from transcribing is very much lessened.

#### The Only Success in Business Worth Having

is brought about by dealing honestly with your customers. In that way a confidence is inspired that is an asset that cannot be measured by money. While the personality of your help has a good deal to do with your success, yet I have never seen a business go into a decline because the help was changed, if the business had been conducted so as to win the confidence of the consuming public.

#### The Buyer of the Present Day Is Appealed to

through his eyes. A great many articles are purchased because they are seen. So the windows become effective methods of advertising. The appeal to the eye is very efficient, especially in the case of new goods. The sampling of goods on the outside of boxes on the shelves are silent but continuous advertisements. The necessity of advertising is being made more manifest every day. The illustrated catalogues with which the country is flooded have increased the knowledge of the public. To meet this knowledge, and to supply the greater wants, it becomes us to study the needs of our trade and to supply them as

far as practicable. When we get this knowledge it is up to us to let the public know what we have.

The well dressed windows, the attractively arranged store, the obliging clerks, are all advertisements, but they do not become effective until the customer comes in contact with them. The customer must come to the store before his interest becomes excited. What means can we use to draw him to the store? There are many ways to do it, but to me the most effective way is to advertise in your local papers.

#### The Question Box.

The Question Box was under the supervision of former National President Bogardus. Under his leadership the discussion of the various topics brought up was spirited and interesting. Among the queries propounded and discussed were the following:

1. On what basis do you figure percentage of profit, on cost or selling price?
2. Where is the best place in the store for your office?
3. How can the retail man compete with the small jobber, who pretends to sell to the consumer at the jobber's price?
4. What should the retail merchant do with the jobber or manufacturer that sells to you and then goes out and hunts up the general store, little tin shop, &c., and takes their orders?
5. Should Hardware and Paint jobbers sell to department stores?
6. Should the retail Hardware merchants support a concern that poses as a wholesale house and at the same time maintains a retail store?
7. Can combination buying be done successfully to save money?

#### Election of Officers.

The following officers were elected to serve for the ensuing year:

PRESIDENT, T. B. Frye, Keyser.  
FIRST VICE-PRESIDENT, W. A. Vance, Clarksburg.  
SECOND VICE-PRESIDENT, Robert Smith, Ronceverte.  
SECRETARY-TREASURER, Leslie Hawker, Shinnston.  
EXECUTIVE COMMITTEE: F. R. Clelland, Fairmont; J. M. Walker, Wellsburg; A. J. Hess, Mannington.

The Executive Committee was empowered to appoint a subcommittee on Legislation, and this committee consists of F. S. Byrer, Philippi; W. H. Miller, Parsons; Bert Bradford, Pennsboro.

#### Other Papers and Addresses.

Among other addresses made and papers read at the convention were those of C. S. Davis, J. M. Davis & Son, Oakland, Md., who contributed a suggestive paper under the title of "Annual Greetings;" James F. Ball, Barrett Mfg. Company, Allegheny, Pa., on "The Buyer's Attitude Toward the Salesman;" W. B. Lockett, Kelly Axe Mfg. Company, Charleston, W. Va., on "Organization;" Charles Barkley, representing Hibbard, Spencer, Bartlett & Co., Chicago, on "Competition and the Man;" C. D. Barbe, Morgantown, W. Va., on "Why Hardwaremen Should Be Members of the West Virginia Association," and by Mr. Gill of the Hanna Paint Mfg. Company, Columbus, Ohio, on "How Can Dealers Encourage the Sale of Paint?" Mr. Gill gave some splendid advice on color combinations, the moving of slow sale goods, the dressing of the show window and how to advertise to get the best results.

#### Manufacturers and Jobbers in Attendance.

Manufacturers and jobbers represented at the convention were as follows:

E. C. ATKINS & Co., Inc., Indianapolis, Ind.: Saws. Represented by J. O. Tate.  
AMERICAN STEEL & WIRE COMPANY, New York: Wire Fence. Represented by S. N. Lippincott.  
BARRETT MFG. COMPANY, New York: Represented by J. F. Ball.  
BELKNAP HARDWARE & MFG. COMPANY, Louisville: Represented by J. B. Summers.  
BILLINGS-CHAPIN COMPANY, Cleveland, Ohio: Paints and Varnishes. Represented by William Hamilton and A. E. Youmans.  
PHILIP CAREY MFG. COMPANY, Lockland, Ohio: Asbestos Roofing and Covering. Represented by Harry Clayton.  
FAIRMONT WALL PLASTER COMPANY, Fairmont, W. Va.: Represented by Will T. Black.  
GILLESPIE VARNISH COMPANY, Newark, N. J.: Represented by L. M. Hoffman.  
HANNA PAINT MFG. COMPANY, Columbus, Ohio: Represented by N. M. Hooker.  
HIBBARD, SPENCER, BARTLETT & Co., Chicago: Represented by Chas. Barkley and S. Farrow.  
KELLY AXE MFG. COMPANY, Charleston, W. Va.: Represented by W. B. Lockett.  
J. C. LINDSAY HARDWARE COMPANY, Pittsburgh: Represented by J. A. Drennan.  
LOGAN-GREGG HARDWARE COMPANY, Pittsburgh: Represented by J. F. Leachman.  
H. W. JOHNS-MANVILLE COMPANY, New York: Represented by E. F. Fuller.

MCINTOSH HARDWARE CORPORATION, Cleveland, Ohio: Represented by Homer E. Drane.  
NATIONAL LEAD & OIL COMPANY, Pittsburgh: Represented by H. M. Brown.  
NATIONAL CASH REGISTER COMPANY, Dayton, Ohio: Cash Registers. Represented by J. H. Sweeney.  
T. H. NEVINS COMPANY, Pittsburgh: Represented by A. B. Cox.  
PITTSBURGH PLATE GLASS COMPANY, Pittsburgh: Represented by G. Thomas Harper.  
PITTSBURGH PAINT SUPPLY COMPANY, Pittsburgh: Represented by Wilbur C. Laughlin.  
PETERS ARMS & SPORTING GOODS COMPANY, Cincinnati: Represented by Wm. M. Locke.  
PITTSBURGH STEEL COMPANY, Pittsburgh: Wire Fences. Represented by R. C. Greph.  
ROBESON CUTLERY COMPANY, Rochester, N. Y.: Represented by D. A. Jack.  
ROCHESTER STAMPING COMPANY, Rochester, N. Y.: Represented by D. A. Jack.  
VAN CAMP HARDWARE & IRON COMPANY, Indianapolis: Represented by E. C. Rector.  
GEORGE WORTHINGTON COMPANY, Cleveland: Hardware. Represented by J. B. Knapp.

#### Convention Notes.

The West Virginia Association will send but one regular delegate to the national meeting in St. Louis this year. By vote it was determined that this honor should go to Secretary-Treasurer Leslie Hawker. Retiring President Kyle was elected to be the alternate.

Among the queries in the Question Box was one: "Would It Add to the Interest of the Meetings to Invite the Ladies?" The question was answered in the affirmative. It is accordingly expected that the fair sex will be represented at the next convention.

Considerable discussion resulted from a proposition to offer a first and second prize to the traveling man bringing in the most members during the coming year. The proposition was vetoed by the traveling men themselves, who protested sufficient loyalty to the organization to go out and work for memberships without hope of pecuniary reward.

Secretary Leslie Hawker has in preparation a booklet giving an account of the Elkins meeting, with other interesting data to members, which he will mail to all members and send out to prospective ones as well.

Charleston and Huntington competed for the honor of holding the 1909 convention. After several brilliant addresses made in their behalf had been made Charleston was selected.

#### MINNESOTA HARDWARE ASSOCIATION.

(By Telegraph.)

THE Minnesota Retail Hardware Association began its twelfth annual convention at St. Paul in the fine new Auditorium admirably adapted to such occasions, Tuesday afternoon, with an actual attendance of about 450, which it is believed will be largely augmented Wednesday and the remaining convention days. The weather is mild and clear. The total membership last year was 752 and the net actual increase of 52 makes the active membership to date 804. The Minnesota Association is thus the second largest retail State Hardware association in the country, Illinois taking first place.

The directors had a session in the morning and after disposing of some routine matters in the afternoon the first session began. The welcome to St. Paul was extended by Louis Betz, representing the mayor, who was out of the city. The response was made by A. T. Stebbins, former president of the association and now vice-president of the National Association. The various committees were announced by the president, Julius Schmidt, who then delivered his annual address. Among other matters touched upon by Mr. Schmidt were the mail order business, mutual fire insurance, Hardware exhibition and the waterways project to connect Duluth by canal with the head waters of the Mississippi.

Secretary Mathews, in his annual report, sketched the events of the year, and after reciting favorable conditions in membership and a summary of the finances, observed that there were only two grievances at present unsettled.

A telegram from R. R. Williams, Hardware editor of *The Iron Age*, was read, sending greetings and expressing regret at being unable to be present.

A recess of 10 minutes was then announced to permit the selection of nine members of the Nominating Committee, to be chosen according to Congressional districts.

M. L. Corey, secretary of the National Association, made an impromptu address on the parcel post question which bristled with suggestions of practical value.

An hour or more was then spent in discussion of queries brought up through the Question Box, which was nearly full. This part of the proceedings was in charge of A. T. Stebbins.

The meeting then adjourned until Wednesday, when the more important work will begin. Tuesday evening an entertainment was given in the Auditorium consisting of music by an orchestra of 32 ladies, with occasional vocal selections by a male quartette.



## New York State Retail Hardware Association.

A VERY large and gratifying proportion of the members were present at the annual convention of the New York State Retail Hardware Association, at Buffalo, last week, and the meeting was a success in all respects. Much spirit and enthusiasm characterized the different sessions, and the deliberations and discussions were interesting and helpful. The organization has reason to congratulate itself on the appearance and ability of its personnel, commercially and socially, composed as it is of men who are abundantly qualified to represent the retail Hardware interests of the Empire State. The Hardware exhibition was a fine one and received much attention from the members, manufacturers expressing themselves as much pleased with the business results.

In our last issue reference was made to the proceedings of the opening session on Tuesday afternoon. At the Wednesday afternoon session the annual reports of Secretary John B. Foley and Treasurer F. E. Pelton



J. H. BRADISH.



L. G. MATTISON.

were read. A. E. Towne, chairman of the Finance Committee, also rendered his report.

On Thursday S. R. Miles, president of the National Retail Hardware Association, made an able address, in which he referred to the present aspect of many trade questions calling for intelligent solution. The parcel post measure now before Congress was given a good deal of consideration, and, while the speaker believed that the passage of any such law was improbable this year, it was desirable that the opposition should be alive and energetic in antagonizing the proposition of a domestic parcel post.

R. R. Williams, Hardware editor of *The Iron Age*, addressed the convention on Thursday afternoon on various phases of the Hardware association movement.

A. E. Towne, chairman of the committee, submitted a number of resolutions which were unanimously adopted. They had reference to the amendment of the Penal Code of New York State in relation to the sale of Firearms and Ammunition, parcel post legislation, pure Paint laws, &c.

### PRESIDENT MATTISON'S ADDRESS.

President Mattison, in his annual address, after some preliminary remarks, devoted himself to the subject of association, on which interesting theme he spoke as follows:

Two men may pass each other on the street almost every day for weeks or months or even years and not recognize or speak to each other. Each may have an instinctive dislike for the other. The dress or walk or some peculiarity of one may offend the sensibilities of the other.

If one should read in the morning paper that the other had got into financial difficulties he would not be surprised, for he would reason that there always seemed something strange about the other, and distrust would follow very naturally.

Some day they meet in an office of a mutual acquaintance. Through courtesy they are polite in their conversation, and they part, each feeling a little more agreeable toward the other. They meet again and warm up a little more toward each other. More meetings and confidences

are exchanged, and soon a strong bond of friendship connects them. Now, should one of them read in the morning paper that the other was in financial difficulties, he would be very much surprised and be inclined to discredit the announcement.

### The Influence of Association

has wrought this change. It has changed the hearts of two men from cold distrust to warm sympathy and confidence. The influence of such association is not likely to stop with the two men. It will be felt in their families and in the community in which they live, which means that the sum total of good has been increased in the city, State and nation.

The power of our association, which we term fraternalism, means more to our association than anything else. The Programme Committee might arrange for a splendid array of talent and do everything in its power for a highly interesting meeting. But if each one of our members felt that not one of the other members cared whether he came or not, and if he did not care whether he should see or visit with any of the other members, one of the hotel bedrooms would be large enough for our meeting.

### Power of Love in Business Affairs.

At a banquet given our association in this city three years ago, our friend, R. R. Williams, said in substance that the motive that makes us labor and work on day after day is the love in our hearts for our homes and dear ones.

Back in the centuries there lived One who devoted His life to the uplifting of man. None ever looked into the needs of the human heart more keenly or studied more closely the forces necessary to the betterment of human existence, and near the end of His life He summed up His message in the teaching that the greatest power in this world is love.

I venture to say something to-day about this power as applied to business. Let the love in the hearts of every one present to-day be turned to hate, and in less than 30 min. we would probably be at each others' throats, no matter how keen our business instinct or how great our business experience.

This power should be prominent in all business transactions.

This country has highly developed its business acumen, analyzing business propositions and problems with marvelous shrewdness. But has man's love of fairness to his fellowman been developed to the same degree? These qualifications should go hand in hand, if we expect to avoid labor troubles and put commercial life on a solid foundation for the future.

### Confidence is a Quality of Love.

Confidence is only induced by a kindly and charitable feeling. Cold indifference produces only distrust. Not



J. B. FOLEY.



F. E. PELTON.

only must we have more confidence in our fellow competitor, but we must make him know and feel that we trust him more fully. A man will be more honest in his dealing if he feels that his neighbor believes him honest. If he thinks that he is looked upon as a rascal, he will be likely to prove to his associates that their estimate is well founded.

When I was a lad at home I was sent to a neighboring village for a few weeks' stay. One day while there some of the women folk found me in the pantry and immediately accused me of stealing doughnuts.

That night after supper a council of war was held with the head of the family over my case. But he came down flat-footed, and held his position, which was that

he did not believe a word of it, because I was not that kind of a boy. That settled it.

I cannot extract the regulation moral out of this tale, for I did steal the doughnuts. But I have been ashamed to look a doughnut squarely in the eye since. Where once I was blind I now could see that I was not expected to be that kind of a boy.

It is among the possibilities that I might have been a horse thief long before this time if that man had not said that I was not that kind of a boy.

The old maxim, "Familiarity breeds contempt" probably came from a diseased mind, and should have no force among fair minded men. It should read, "Familiarity breeds increased respect and admiration."

As Hardware merchants we have a license to stand well in our communities. Jealousy of our competitors does not improve our standing, nor assist in elevating others.

Some of my ancestors of the past and also some of yours, were the so-called barbarians, and perhaps no more crafty and cruel people ever lived. One of my ancestors, after noticing that one of your ancestors was very thrifty in the accumulation of wealth, which consisted of goats and wives, clothed himself with his tiger-skin, took his war club and went in search of the envied one, and when found, he promptly knocked the head off his enemy and appropriated his goats and wives as his own. And our ancestral uncles, cousins and aunts rose up from behind their respective rocks and trees and applauded.

#### I See My Brother Hardwareman Down the Street.

by close application to business and good judgment, having a good trade and apparently making a little money. Green-eyed jealousy takes possession of me and I commence a system of cutting prices and of writing adver-



J. G. FERRES.



L. J. ERNST.

tisements full of insidious deceit; every chance that I get to say something to his disadvantage, I do so. If in time I can see his business gradually falling away or see a change in the dress or expression of countenance in him or his family, I say, "Just wait. I'll fetch him in time."

How much better am I than my Barbarian ancestor? How much has been done to advance the cause of true civilization? When the words "Give every man a square deal" were spoken, the man who uttered them was not down on all fours. Neither is the merchant who says, "I will deal fairly with my competitor." Both men are standing erect in the image of God, breathing the atmosphere of love and power from above.

It is perfect idiocy to think that to be good business men we have to root in the mud. We want power! Every one wants power! If we wish to have more power in our business, in our communities and among men, we can have it just to the degree that we reach out the hand of fellowship to our neighbor and with honesty in our hearts say, "My brother."

#### HARDWARE MUTUAL FIRE INSURANCE.

Following was the admirable address of W. P. Lewis, Huntingdon, Pa., on Hardware mutual fire insurance:

It gives me unfeigned pleasure to address this convention. It is announced that I am to represent the interests of the two Hardware mutual fire insurance companies, the National Hardware Mutual and the Pennsylvania Hardware Mutual, both with home offices at Huntingdon, Pa. This is primarily the object of my visit to Buffalo to-day. I shall shortly revert to this text and stick to it. But for a moment permit me to digress and suggest that we take a

#### Brief View of the Great Movement.

which increasing in power as the years pass, spreading and developing in almost every State in the Union, look-

ing to the harmonizing of those interests which manufacture, assemble and distribute Hardware products and is broader than a consideration of the insurance feature only.

We have had opportunity to study questions from the point of view of the jobber, the traveling man and the retailer; you will note that I said "study," not "solve." This movement is now and always has been one of profound interest to me and it should hold a similar interest for every retailer in New York and elsewhere. You are a unit in the community, county, State and country in which you dwell. You are particularly a unit in the department of Hardware commerce. When severe and adverse conditions press too hard you may feel a sense of helplessness in defense. Singly your suggestions and requests pass quietly, yea speedily, to the realm of forgotten things, but when 10,000 Hardwaremen suggest some better way and request that the better way be considered, quickly a conference is called, and I have known of many better ways being adopted. Your name on the list counted.

#### Any Hardware Man Who Ignores His State Association.

who declines to do his part in this great movement to establish a reign of fair profits and fair competition, is certainly untrue to his own best interests and his association. This is an era of development. Possibly you have not realized the fact that the most powerful retail organization in the country to-day is the National Retail Hardware Association, of which you are a part. They have aroused the manufacturers to action, they have stirred the jobber to deep thought, they have demanded protection and a fair profit and they are getting it. They have made the movement educational, lessons in window dressing, methods of collecting and keeping accounts, of stock taking and stock keeping, of buying, selling, price marking, percentage of profits and salesmanship, all this is the heritage of a membership. They are also watching legislation in the interests of the retailer, they are publishing a trade paper of interest and force, and they have organized mutual fire insurance companies, which are operated on the sanest, soundest and safest mutual insurance principal that can be formulated. This statement is not accepted by certain members of this association. In scanning the policy records of our companies I find that out of a total of 331 of your revised list of members we have 117 names only who hold policies in one or both of our companies. This leaves 214 members who do not recognize the advantages of mutual fire insurance as promulgated in the by-laws of these two companies.

#### In Presenting the Claims of These Two Companies

for your confidence and patronage, we will likely say little that is new to most of you, and absolutely nothing that has not been discussed and considered time and time again, but always resulting in the final verdict that no better plan can be formulated for mutual fire insurance:

1. A class risk, Hardware stock only.

2. Hardwaremen, generally speaking, are fine moral hazards. (I refer here of course to the moral fire hazard only.)

3. Scattered risks.

4. Limited policies.

So much for the theory. What of the active outworking of the plan?

The Pennsylvania Company will be six years old in the fall of 1908, the National Company five years old at the same time. There has never been a time thus far when either company hesitated a moment in paying a loss. We are growing, and it is in the power of the retail Hardwaremen of the country to build up a mutual insurance company that will give better protection than any form of insurance in existence.

#### The Most Serious Thing That Can Be Said Against Us

is that we are young, but we are overcoming that objection rapidly. It may be that our method of operating is not plain to some members, and that they do not understand how, when we are mutual and paying back to the policy holders our profits, where are increase and strength, or what is the same, our surplus in cash comes from. We do not pay back all the profits. One-third of the profits is placed to the credit of the guarantee fund, two-thirds of the profits are paid back to the policy holders. This guarantee fund is invested and is interest bearing. Our operating expenses are nominal. It is no far cry for us to expect the income from our investments to pay all operating expenses. I will go further, it is possible that not only all operating expenses but a share of the losses can be met out of the income from our investments. Our operating expenses are not apt to increase greatly, and with large, broad, enthusiastic cooperation by all noninsurance members who are now doing nothing for us or for themselves, our income from investments would grow apace visibly. Let us take a look at the



**Methods and Habits of the Stock Companies.**

Let us note closely the basis on which so many members place their unquestioning confidence. Let us see to what extent their lines of action differ from ours, and also let us see in what degree they are superior.

First.—The stock companies have a capital, that is true; usually, however, it is a comparatively small capital, but whether small or large, if 20 per cent. of that capital stock is encroached upon—that is to say, used for paying losses—the State of Pennsylvania would at once place them in the hands of a receiver. Not many of them are placed in receiver's hands, therefore not many of them encroach upon their capital stock for paying losses, and therefore the capital stock is not in the remotest degree the source from which they secure funds to liquidate losses or operating expenses; it does not operate at all as a bulwark of stability.

Second.—Where, then, do they get the money with which to meet losses and operating expenses? From the premiums they charge on risks, from that source and that source alone, except of course they have income from investments. They pay losses out of the premiums collected. That's what we do. They pay partly operating expenses out of income for investment. That's what we do. We have eliminated capital stock as a factor in paying losses and thus far we appear to operate along the same lines, but at this point there is a wide divergence. It is for you to judge in whose favor this divergence as an insurance principle leans.

(a). If you Hardware men insure in a stock company you are co-insured with millinery, drugs, groceries, jewelry, dry-goods, hats and caps, boots and shoes, clothing, furniture and carpets, confectionery, livery stables, feather foundries and powder works. All of these equally hazardous, and most of them far more hazardous than Hardware stocks. Your rate is figured from an average based on just such risks. You pay whatever rate the stock companies make it, and at the end of the year you get nothing.

(b). If you insure in the National and Pennsylvania Hardware Mutuals, you are co-insured with Hardware men only, with risks, rates, amount of policies all somewhat similar to your own. 'Tis a well balanced business proposition, and at the end of the year you receive 66 2-3 per cent. of whatever profit has been made, and these profits have been very consequential.

**Relative Financial Strength.**

At this point I am willing to rest the case on the question as to which method or principle of insurance is most favorable to the policy holder. So far we have dealt only with comparisons of methods employed by stock and Hardware mutual fire insurance companies. Nothing has yet been said concerning their relative financial strength, and as this point is the one on which the hoary headed prejudice of 100 years is based, we desire to discuss it. In handling a matter so important as this I do not want to talk loosely, for the statement I make here and now, and which we propose to prove from the records, is:

First.—That for every \$1000 of insurance in force our Hardware mutuals have twice as much cash on hand as the stock companies.

Second.—That for every \$1 of assets held by the stock companies they have \$151 at risk, while for every \$1 of assets in our companies we have less than \$70 at risk. Or, to state it in another way, the assets of our Hardware mutual companies, in proportion to our insurance in force, are double the amount of assets held by the stock companies in proportion to their insurance in force. We will admit but one qualification to the foregoing statements; that is, that this is a record of all the stock fire insurance companies chartered in the State of Pennsylvania. Whether or no these ratios would be maintained in every State I leave to your judgment; we have not had time to get all the facts.

We wish it understood that the national and Pennsylvania companies are here for business. We want every Hardwareman in New York, through all the East, to have his name on our policy records. But these two companies will never feel that the object of their existence has been attained until the time shall come when it will be universally recognized that these companies are one of the most prominent, visible evidences of the constructive genius of the Hardware association. When it shall be recognized that the Hardware associations have been fully able to defend themselves against the autocratic attitude of stock companies, have been able to plan, organize companies, develop, maintain and place them on a basis that shall endure for all time, their permanence is at once a boon to future generations and a monument to the magnificent spirit of the Hardware associations.

**Election of Officers.**

The newly elected officers chosen to conduct the affairs of the association for the ensuing year are as follows:

PRESIDENT, John Holley Bradish, Batavia.  
FIRST VICE-PRESIDENT, C. J. Elderfield, Niagara Falls.  
SECOND VICE-PRESIDENT, Frederick M. Young, Gloversville.

SECRETARY, John B. Foley, Syracuse.

TREASURER, F. E. Pelton, Herkimer.

DIRECTORS: C. P. Sherwood, White Plains, Charles E. Wethey, Pt. Byron; W. D. Ganey, Auburn; A. F. Miller, Olean; T. W. Stevens, Oneonta; L. J. Ernst, Rochester; George W. Rockwell, Horseheads; W. J. Hoyt, Wells-ville; Charles J. Fix, Buffalo; J. F. Williams, Baldwinsville; L. G. Mattison, Newark; J. G. Ferres, Johnstown; A. E. Towne, Saratoga Springs; A. R. Grant, Syracuse; Charles W. Young, Elmira.

A board of 15 directors was chosen, instead of nine as heretofore, with a view to better representing the different sections of the State.

The delegates chosen to attend the convention of the National Retail Hardware Association, at St. Louis, March 24, 25 and 26, are as follows: L. G. Mattison, retiring president; John B. Foley, secretary; John G. Ferres, director; Louis J. Ernst, director, and John Holley Bradish, the new president.

**Question Box.**

The morning session of Friday was devoted to a discussion of Question Box topics, on which there was an interesting running discussion, participated in quite generally by the members of whom there was a good attendance. The Question Box was in charge of John G. Ferres. Among the topics treated were the licensing of peddlers with references to the laws as passed by local boards. Various methods of exercising a proper supervision over them were described, in one instance a local official being given an honorarium of a few dollars a year to add this function to other regular duties, which in practice had proved satisfactory.

Another topic was that of handling small accounts. Some kept a special ledger, while others referred to the watchfulness necessary in these matters. In some instances small accounts were discouraging, and in larger ones for Stoves, Ranges, Plows, Implements, &c., it was found helpful to name a specific time for such payments and a few days before maturity to spur the debtor up with a reminder of the obligation, instead of allowing it to run indefinitely. Getting a large proportion of cash at time of purchase was urged so as to leave as little unpaid as possible.

The question of contributing to church fairs, hospitals, ball games, theatres, fire companies, associations, &c., developed a good deal of discussion. Most of the speakers were antagonistic to the practice, but it nevertheless found some able defenders.

**Entertainment.**

The banquet on Thursday night was given in the large assembly rooms of the Iroquois Hotel, both of which were necessary to accommodate the 254 persons, including a number of ladies, who were present. Across the end of one of the two connecting rooms was the speakers' and guest table, other long tables at right angles being occupied by the main body of guests.

Richard R. Williams, Hardware editor of *The Iron Age*, who acted as toastmaster, dwelt felicitously on the fitness and desirability of having the ladies present, and urged that in the future this feature of convention gatherings be observed by the members who were urged to bring their wives and daughters to the convention. The menu was an excellent one and well served, an orchestra and the Lyric Quartette rendering selections of instrumental and vocal music. The list of speakers included S. R. Miles, president of the National Retail Hardware Association; Hon. William H. Hotchkiss of Buffalo, who delivered a scholarly and witty address on "Bankruptcy," sketching mainly the ancient laws and culling from the past some literary gems concerning bankruptcy which were both instructive and amusing; E. J. Cornish, president of the Carter White Lead Company of Chicago, whose response to "Pure Paint Legislation" bristled with information and witticisms, and Councilman Alfred H.

Burt of Buffalo, whose remarks in reply to the toast "Profit and Cost" were much enjoyed.

The smoker given by the manufacturers and jobbers of Buffalo Wednesday night at the Ellicott Club was a most enjoyable occasion, the large assembly room being crowded to its utmost capacity. The company was seated at round tables in groups of six. A very fine vaudeville entertainment was presented, the performance beginning about 9 o'clock and lasting until after 1. A pamphlet containing the words of many popular songs was given each guest and at intervals the songs were sung in chorus. Refreshments were served during an intermission, which divided the function into two parts.

As the smoker was obviously confined to the men, a theater party was provided for the ladies, who were entertained at the leading Buffalo theater.

#### H. J. Fueller's Address.

H. J. Fueller, secretary of the Abram Cox Stove Company, made an interesting address on the subject of "Specialization in the Hardware Business." Attention was drawn to the importance of heating and ventilation on scientific principles rather than the rule o'thumb, making it plain that all merchants who wanted to know how to properly install Furnaces and accompanying systems of ventilation would be cheerfully supplied by manufacturers with adequate information. Mr. Fueller also discussed in a lucid and interesting manner the question of how to make the tin shop profitable.

#### CONVENTION NOTES.

E. J. Cornish of the Carter White Lead Company, Chicago, delivered a very interesting and elaborate address on paint legislation, which will be given a place in a later issue.

An interesting feature of the convention was a voting contest conducted by L. & I. T. White Company, Buffalo, who offered a prize for the most popular man at the convention. The genial secretary, John B. Foley, Syracuse,

was selected, he having received about 240 votes. The gift was a leatherette case, about 40 in. square, with hinged cover, lined top and bottom with white broadcloth, on which rested in a circle a fine set of Carpenters' Chisels, in the center of which was a small family Cleaver.

Secretary Foley stated that in the two years which have elapsed since February, 1906, there had been an increase of 89 in the membership, and at present the total was 341, and that the honorary memberships, first authorized two years ago, aggregated 283.

The choice of a meeting place for the next annual gathering is in the hands of the Board of Directors. Rochester is bidding for the honor, and Albany is also being talked of. The desire seems to be to have the meeting place as centrally located as possible, so as best to serve the convenience of the greatest number.

#### THE HARDWARE EXHIBITION.

The exhibit of merchandise exhibited in the ample auditorium of the convention hall was exceptionally large and complete. Following is a list of the exhibitors:

ACME LEAD & COLOR WORKS, Detroit, Mich.  
ADAMITE ABRASIVE COMPANY, North Tonawanda, N. Y.  
ALLEN & POLLOCK, Buffalo, N. Y.  
AMERICAN STEEL & WIRE COMPANY, New York City.  
E. C. ATKINS & Co., Indianapolis, Ind.  
ATLANTIC STAMPING COMPANY, Rochester, N. Y.  
BARRETT MFG. COMPANY, New York.  
HERMANN BOKER & Co., New York  
BOSTON BELTING COMPANY, Boston, Mass.  
BUFFALO CO-OPERATIVE STOVE COMPANY, Buffalo, N. Y.  
BUFFALO FORGE COMPANY, Buffalo, N. Y.  
BUFFALO WHOLESALE HARDWARE COMPANY, Buffalo, N. Y.  
BUTLER & JOHNSON, Syracuse, N. Y.  
CARBORUNDUM COMPANY, Niagara Falls, N. Y.  
PHILLIP CARRY MFG. COMPANY, Lockland, Ohio.  
CARTER WHITE LEAD COMPANY, Chicago, Ill.  
COLDWELL, LAWN MOWER COMPANY, Newburgh, N. Y.  
COLONIAL WORKS, Syracuse, N. Y.  
CO-OPERATIVE STOVE COMPANY, Rochester, N. Y.  
CORBIN CABINET LOCK COMPANY, New York.  
DETROIT WHITE LEAD WORKS, Buffalo, N. Y.  
F. W. DEVOE & C. T. REYNOLDS COMPANY, New York.  
FERDINAND DIECKMANN, Cincinnati, Ohio.  
GUS DOLAN, Rochester, N. Y.  
DOVER MFG. COMPANY, Canal Dover, Ohio.  
DU PONT POWDER COMPANY, New York.  
ESTATE OF P. D. BECKWITH, Dowagiac, Mich.

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 FULGHUM & SMITH, Buffalo, N. Y.  
 FULLER & WARREN COMPANY, Troy, N. Y.  
 GARRY IRON & STEEL COMPANY, Cleveland, Ohio.  
 GLASCOCK BROS. MFG. COMPANY, Muncie, Ind.  
 GALUSHA STOVE COMPANY, Rochester, N. Y.  
 C. T. HAM MFG. COMPANY, Rochester, N. Y.  
 HARRINGTON CUTLERY COMPANY, Southbridge, Mass.  
 FUMASON & BECKLEY MFG. COMPANY, New Britain, Conn.  
 JEWELL & CO., Buffalo, N. Y.  
 JEWETT BELTING COMPANY, Hartford, Conn.  
 KAMPE BROS., New York.  
 LANDERS, FRARY & CLARK, New Britain, Conn.  
 LASHER MFG. COMPANY, Davenport, Iowa.  
 LAWRENCE BROS., Sterling, Ill.  
 LIBBY, HARLOW & CO., Boston, Mass.  
 LISK MFG. COMPANY, Canandaigua, N. Y.  
 LOVELL MFG. COMPANY, Erie, Pa.  
 LUNDAY MFG. COMPANY, Marshalltown, Iowa.  
 MCINTOSH HARDWARE CORPORATION, Cleveland, Ohio.  
 MARLIN FIRE ARMS COMPANY, New Haven, Conn.  
 MATHEWS & ROUCHER, Rochester.  
 MERIDEN CUTLERY COMPANY, Meriden, Conn.  
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 NATIONAL CASH REGISTER COMPANY, Dayton, Ohio.  
 NEY MFG. COMPANY, Canton, Ohio.  
 NIAGARA MACHINE & TOOL COMPANY, Buffalo, N. Y.  
 OHIO VARNISH COMPANY, Cleveland, Ohio.  
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 PETERS CARTRIDGE COMPANY, Cincinnati, Ohio.  
 PHOENIX HARDWARE COMPANY, Homer, N. Y.  
 PIKE MFG. COMPANY, Pike, N. H.  
 PITTSBURGH STEEL COMPANY, Pittsburgh, Pa.  
 PITTSBURGH LAMP, BRASS & GLASS COMPANY, Pittsburgh, Pa.  
 PRATT & LAMBERT, Buffalo, N. Y.  
 JAS. H. PRINCE PAINT COMPANY, Boston.  
 PRITCHARD-STRONG COMPANY, Rochester, N. Y.  
 RATHBONE, SARD & CO., Albany, N. Y.  
 REPUBLIC METALWARE COMPANY, Buffalo, N. Y.  
 REED MFG. COMPANY, Newark, N. Y.  
 RICHARDSON & BOYNTON COMPANY, Buffalo, N. Y.  
 ROBESON CUTLERY COMPANY, Rochester, N. Y.  
 ROCHESTER STAMPING COMPANY, Rochester, N. Y.  
 RUBBER-SET BRUSH COMPANY, Newark, N. J.  
 SARGENT & CO., New York.  
 WM. SCHOLTHORN COMPANY, New Haven, Conn.  
 SCRANTON STOVE WORKS, Scranton, Pa.  
 SILL STOVE WORKS, Rochester, N. Y.  
 SIMONDS MFG. COMPANY, Fitchburg, Mass.  
 STANLEY WORKS, New Britain, Conn.  
 L. S. STARRETT COMPANY, Athol, Mass.  
 SUMMIT FOUNDRY COMPANY, Geneva, N. Y.  
 A. L. SWETT IRON WORKS, Medina, N. Y.  
 SYRACUSE STOVE COMPANY, Syracuse, N. Y.  
 TREMAN, KING COMPANY, Ithaca, N. Y.  
 UNION METALLIC CARTRIDGE COMPANY, New York.  
 UNITED ROOFING & MFG. COMPANY, Philadelphia, Pa.  
 WEED & CO., Buffalo, N. Y.  
 I. & L. J. WHITE COMPANY, Buffalo, N. Y.  
 WHITE LILY WASHER COMPANY, Toledo, Ohio.  
 WILKINSON MFG. COMPANY, Binghamton, N. Y.  
 WINCHESTER REPEATING ARMS COMPANY, New Haven, Conn.  
 YALE & TOWNE MFG. COMPANY, New York.

## DEATH OF THOMAS S. LAUGHLIN.

Thomas S. Laughlin, Portland, Maine, head of the Thomas Laughlin Company, manufacturer of marine hardware, died suddenly February 15, aged 65 years. He was the son of Thomas Laughlin and was born at St. Stephens, N. B. When he was a little boy his parents moved to Pembroke, Maine. Learning the shipsmith's trade he moved to Portland and started a small business of his own, and in 1860 his father joined him and the house of Thomas Laughlin & Co. was established. The business grew; and finally the present site was occupied, and the works have since been enlarged from time to time until they constitute one of the most important in the country for the manufacture of marine hardware. Upon the death of the father the business was incorporated as the Thomas Laughlin Company, with Thomas S. Laughlin as president. Mr. Laughlin was an unusual type of man in many ways. Successful as a business man, he was an earnest student of political economy and was known as an authority on the subject. He was deeply interested in the cause of prohibition, and was active in the movement which is one of the foundations of the present system of government of Maine. He was very active in philanthropic affairs, and was a director of the Associated Charities of Portland. His charities took many forms of usefulness. He was a director of the Portland Public Library, was prominent as a Mason and was an Odd Fellow. Though a member of no church, he was active in church work. His wife, whom he married early in life, survives him, together with a son, Walter J. Laughlin, and a daughter.

James R. Noss has recently completed a new building, 25 x 60 ft., with brick veneer finish, at Aliquippa, Pa.,

and it is now being stocked with a line of Hardware, Cutlery and House Furnishing Goods, to supply the demands of that growing town.

## AMERICAN HARDWARE CORPORATION.

AT the annual meetings of the constituent companies of the American Hardware Corporation, New Britain, Conn., held last week, a number of changes were made in the personnel of the various companies. Phillip Corbin, who for over 50 years has been president of P. & F. Corbin, and has been president of the Corbin Cabinet Lock Company ever since its formation, has felt it incumbent upon himself to retire from these positions. He will, however, still retain his position as president of the American Hardware Corporation, which controls in every way the policy and destinies of all the subsidiary companies.

The following is a list of the officials of the different constituent companies:

### P. & F. Corbin.

PRESIDENT, Charles H. Parsons.  
 FIRST VICE-PRESIDENT, Charles E. Wetmore.  
 SECOND VICE-PRESIDENT, Charles B. Parsons.  
 SECRETARY, A. N. Abbe.  
 TREASURER, Charles E. Wetmore.  
 ASSISTANT TREASURER, F. L. Prior.  
 DIRECTORS: Phillip Corbin, Charles H. Parsons, Charles E. Wetmore, Charles Glover, Charles M. Jarvis, A. N. Abbe, C. B. Parsons.

### Russell & Erwin Mfg. Company.

PRESIDENT, Howard S. Hart.  
 VICE-PRESIDENT, Benjamin A. Hawley.  
 TREASURER, Isaac D. Russell.  
 ASSISTANT TREASURER, John H. Van Newkirk.  
 SECRETARY, Theodore E. Smith.  
 DIRECTORS: Andrew J. Sloper, Frank L. Hungerford, Charles E. Mitchell, Howard S. Hart, Benjamin A. Hawley, Isaac D. Russell, Phillip Corbin, Charles M. Jarvis, Joel H. Van Newkirk.

### Corbin Screw Corporation.

PRESIDENT, Charles Glover.  
 VICE-PRESIDENT, Clarence A. Earl.  
 TREASURER, Theodore E. Smith.  
 SECRETARY, William J. Surre.  
 DIRECTORS: Phillip Corbin, Charles M. Jarvis, Charles Glover, Howard S. Hart, Theodore E. Smith, Charles H. Parsons, B. A. Hawley, C. A. Earl, W. J. Surre.

### Corbin Cabinet Lock Company.

PRESIDENT, C. H. Baldwin.  
 VICE-PRESIDENT, W. H. Booth.  
 TREASURER, C. H. Baldwin.  
 SECRETARY, W. H. Booth.  
 ASSISTANT SECRETARY, J. H. Latham.  
 ASSISTANT TREASURER, C. A. Blair.  
 DIRECTORS: Phillip Corbin, Charles M. Jarvis, Charles Glover, Darius Miller, W. H. Booth, C. H. Baldwin, D. O. Macquarrie of Chicago and George F. Taylor of New York.

### Corbin Motor Vehicle Corporation.

PRESIDENT, H. S. Hart.  
 VICE-PRESIDENT AND TREASURER, Max S. Hart.  
 ASSISTANT TREASURER AND SECRETARY, B. B. Bassette.  
 DIRECTORS: Phillip Corbin, Charles M. Jarvis, Howard S. Hart, Charles Glover, Paul P. Wilcox, Max S. Hart, Andrew J. Sloper, Robert C. Mitchell, B. B. Bassette.

Chas. H. Parsons, the new president of P. & F. Corbin, has been with the company since 1873. He has maintained a personal relationship with the large customers of the company, and is one of the best known of New Britain's manufacturers. Carlisle H. Baldwin, the new president of the Corbin Cabinet Lock Company, has been identified with the company since 1899, having previously for a number of years been with the Eagle Lock Company.

The next annual convention of the Southern Hardware Jobbers' Association will be held at Hot Springs, Ark., on June 9-12. C. E. Kersey, Richmond, Va., is secretary-treasurer of the association.

Wilson Hardware Company, Wilson, N. C., has been incorporated with a capital of \$25,000, to conduct a retail business in general Hardware and allied lines.

C. H. Allen, Seneca, Mich., has sold his store and stock of Hardware and Implements to W. C. Hart, who will continue the business.

## Iowa Retail Hardware Association.

ON the opening day of the tenth annual convention of the Iowa Retail Hardware Association the State was visited by a young blizzard, a fierce, blocking snow-storm that effectually impeded all forms of transportation for some hours. Many on their way to Cedar Rapids were so much delayed that they were unable to attend the opening session Tuesday afternoon, while others found it advisable not to leave home until the storm was over and traffic had returned to something like normal conditions. But any one who believes that the heaviest storm of a northern Iowa winter can check their enthusiasm or seriously reduce their attendance does not know the loyalty and energy of the Iowa Hardwaremen. On the second day there were close to 500 merchants registered, and over that number attended the Wednesday and Thursday sessions. Many representatives of manufacturers were also present in connec-



P. C. DE VOL.



J. F. DOTY.

tion with the Hardware show, and there were large delegations from the jobbing houses that work the State. All united in pronouncing Cedar Rapids

### An Ideal Convention City,

affording a good hall for the meetings, splendid quarters for the Hardware exhibition and ample hotel accommodations of a high order. Unstinted praise and appreciation were expressed for the tireless and unselfish work of the local members, particularly George T. Gadd, J. M. Martinek and W. H. Stepanek, upon whom the arduous work of preparation devolved. No less important in contributing to the success of the convention were the enthusiasm and well directed efforts of the officers and directors of the association, all of whom were on the ground early and spared no pains which could contribute to the pleasure of the members and guests of the association and the success of every feature of the programme. In its president, P. C. De Vol, the association has a dignified, conscientious and clear thinking presiding officer, whose re-election at the closing session was a well merited recognition of his ability.

### The Programme

was unusually long, occupying four days, but was wisely arranged with a view to variety, each day's time being divided between the exhibits, to which the mornings were given up; the formal meetings, which were held afternoons, and entertainment features in the evening. The exhibit hall was closed during the business sessions, which many of the manufacturing and jobbing representatives availed themselves of the opportunity to attend. All meetings were open except the executive session at which the Question Box was taken up. The latter was a feature of great interest, to which one whole afternoon was devoted. It was under the able direction of a committee, who made careful preparation in advance, and was presided over by L. C. Abbott, Marshalltown, who led the discussions with a personal magnetism, wit and clear headed business intelligence which contributed largely to their freedom and value.

### Question Box.

Following is a list of the more important questions taken up:

1. Should retailers handle the goods of manufacturers selling catalogue houses, and how should they be influenced by the attitude of jobbers on this question?
2. Is it feasible for association members to conduct a co-operative buying organization?
3. How shall we induce religious and fraternal papers to discontinue running illegitimate advertisements of mail order concerns?
4. Would it be practicable to establish through the association a sort of clearing house for overstock, unsalable goods, &c.?
5. Is the present freight rate on Wire Fence a just one?
6. What is the experience of members with different lighting systems?
7. Ought the present law regarding outlawed accounts to be revised?
8. Is substitution, so called, dishonorable and to be classed with counterfeiting?
9. Is it wise to carry cheap articles which can be sold low enough to meet the catalogue house price?
10. What is the best way to collect slow accounts?

### Association Clearing House.

On all these questions valuable and practical ideas were brought out, many members taking the floor to give suggestions and experiences. Perhaps the most novel and interesting proposal was the establishment of a sort of association clearing house, and this will undoubtedly be given a trial. All merchants are sometimes overstocked with certain lines which they could dispose of to other merchants in the State who need to buy at terms favorable to both. Similarly retailers often find themselves with a stock of articles unsalable in their locality, which a merchant in another place could readily dispose of. It is proposed that the association try to find means of bringing together buyers and sellers of such goods, and the idea seems to be a highly valuable and practicable method of increasing the advantages of association membership.

### Address of S. R. Miles.

Iowa is especially proud of the fact that one of her sons is this year president of the National Retail Hardware Association—S. R. Miles, Mason City. Although called to other States by the duties of his office, Mr.



S. R. MILES.



A. R. SALE.

Miles was present at the opening session of his own State Association and made an able, though informal, address, touching on many matters of national importance. Mr. Miles is a man whom the Iowa Association delights to honor, and his presence and his address were greatly appreciated. After a few remarks of a personal nature in his usual happy vein, Mr. Miles referred to the Iowa Mutual Insurance Company, reviewing the history of its organization and its subsequent successful operation until last year, when it was influential in securing the passage of better mutual insurance laws by the State Legis-



lature. Then, touching on national questions, Mr. Miles said in part:

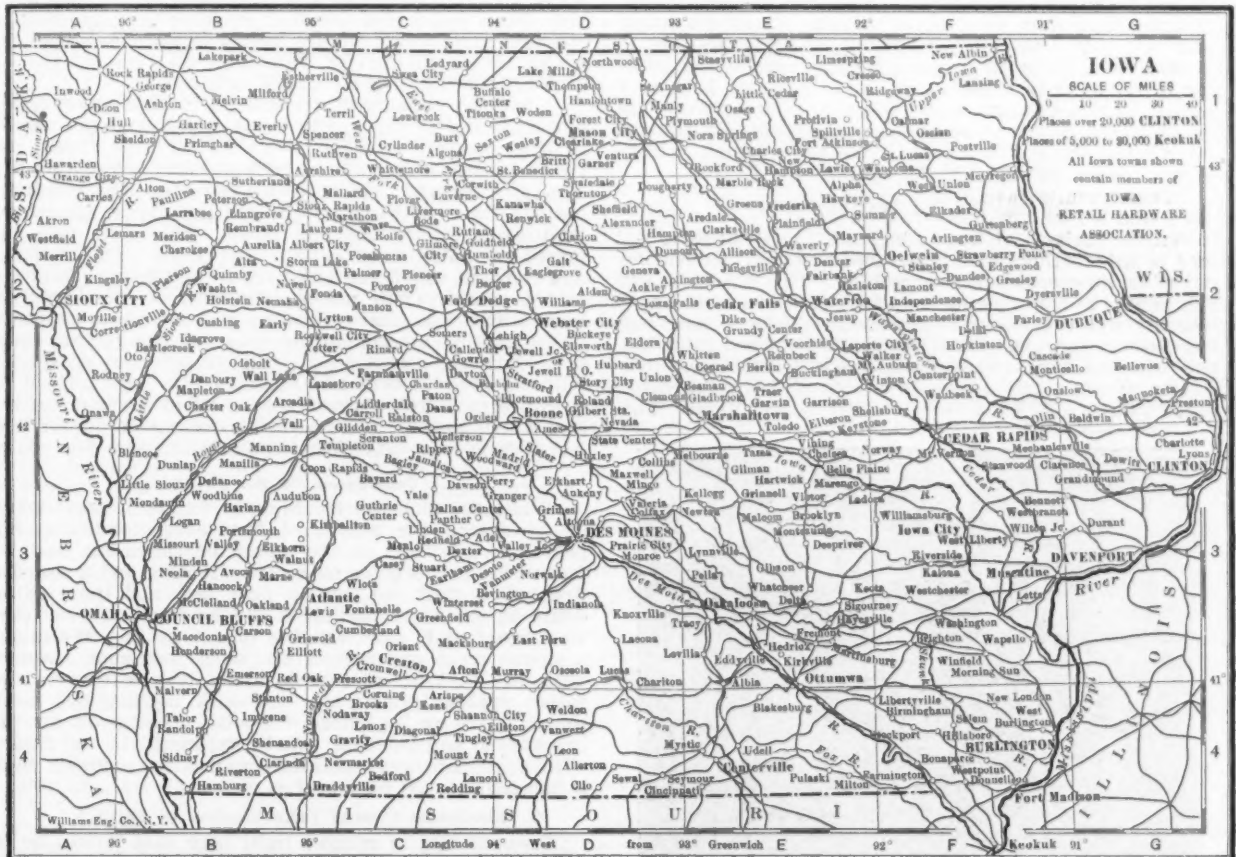
The National Association during the past few months, and I might say during the past two or three years, has been working along lines in which it has been able to interest not only the officers of the association, but I am glad to say all, or a very large part of, the membership of the association have responded splendidly when they have been called upon. During the past few months, particularly, we have had to do with the question of parcel post.

#### Hardwaremen's Opposition to Parcel Post.

It is gratifying in a way to every Hardware merchant to have word come to us from Washington, D. C., that the Hardware people are the only people in the country that are doing good work along this line. This is not true; there are a number of other splendid associations that have been doing splendid work along this line, but we seem to have been selected out as a special

of the criticisms, we must take it that the Postmaster-General himself considers the opposition we have been putting up to be based entirely upon selfish grounds. Well, I don't know but I am willing to stand for that charge. I am willing to be accused of being selfish. I think that anything that affects my business—my own personal business—any legislation that will in any way affect my business, will affect likewise the business of every retail merchant of the country. So that I believe in opposing any measure, from what you may term, if you will, an entirely selfish motive, if I can at the same time be working in the interest of the people that are engaged in the same class of business that I am engaged in with that thought in mind I am entirely willing that the Postmaster-General or any one else call me selfish in my opposition to parcel post.

They tell us we are selfish. I believe that that charge can be reasonably made against the press of the country. They are paying for the carrying of their publications through the mails 1 cent a pound. Figures in



Hardware Association Map of Iowa.—The Towns Represented Contain One or More Members of the Association.

target by the Post Office Department for censure and criticism of the work we have been doing.

#### Unfairness of the General Press.

No one who has been a student of this kind at all can help but be impressed with the evident unfairness with which we have been treated by the press of the country, by the newspaper press, by the magazines and periodicals and by the farm papers. You have seen it in print repeatedly, no doubt. I have. I have been told the same thing, that we were opposing parcel post because we did not understand the subject—we didn't know what we were opposing. But if you have seen in any publication of any character, anywhere, at any time, an intelligent discussion of the parcel post, you have seen something that has not come to my notice. It would seem to me that if we are opposing this parcel post movement inaugurated by the Postmaster-General, and apparently with success, that there would be some attempt on the part of those various publications to conduct a campaign for education. But this does not seem to be their disposition. I don't know why. I say I don't know why. I rather think I do. I rather think you do. They tell us we are opposing it, as well, from selfish motives, motives that are entirely selfish.

#### Postmaster-General Answered No Arguments.

The Postmaster-General, in a letter to *The Iron Age* on the 13th inst., takes occasion to say that he has answered every criticism to the parcel post that was not based on entirely selfish basis. Not having answered any

the Post Office Department will show it is costing 8 cents. In other words, they are receiving 7 cents a pound on every pound of their matter that goes through the mails. It is very possible that they have no right to say that is a selfish reason for favoring a parcel post.

#### Interest of the Farm Journals.

The farm journals of the country are another class of publications that have been accusing the retail merchants of the country of opposing the parcel post for selfish motives. You take the average farm publication of the country and if your eyesight is good, making it possible for you to read the print that you will find in all the farm journals, I think you will find a very good reason for their favoring a parcel post. Take their advertising columns all the way through, and the advertising is made up of more than 90 per cent. from people who are doing a mail order business, and it is little wonder that the publications of that class are favoring the parcel post.

#### Campaign of Education.

We do not believe it is fair to the people of this country to enact a parcel post law until the people have been given an opportunity to study. Now we want you to hold on in this movement and wait a while until we have been given an opportunity to put all of the facts in relation to a parcel post before the entire people of the country. There is not any question but what if there are more good reasons why this country should have a domestic parcel post than there are reasons why we should not have it we are going to have it. It does not

make any difference how much opposition is made to the project from any source any time. But I do not believe a careful and close study of the situation will convince the average citizen that there is a demand for a parcel post in this country.

#### Relations with Manufacturers and Jobbers.

The general work of the National Retail Hardware Association has been progressing along lines somewhat similar to those that have been pursued during the past several years. We succeeded last year for the first time in being recognized by the American Hardware Manufacturers' Association in their convention. We were asked to appear upon their programme. We did so. We take it that this has been brought about—this recognition by the manufacturers and this recognition by the jobbers of the country—has been brought about by methods of work which could not be questioned in any way, by methods that have tended to build up the business of the members of the National Retail Hardware Association, but not tear down the business of our competitors. It has taken us a long time to convince the jobber and manufacturer that we were sincere in our efforts along this line, but we finally succeeded in doing so, and it is said everywhere by people who are judges that nothing of the kind in trade organization has ever been witnessed in this country as the situation now between the retailer, the jobber and the manufacturing Hardware interests of the entire country. We are working in harmony; we are getting splendid results.

#### Building Up, Not Tearing Down.

These results have been along the line of building up, as I said before, our individual business, and not tearing down the business of the competitors. I do not believe it can be said at this time by the local press—I do not know whether they have any representatives here or not; but too often in large, flaring headlines has it been said that the principal work and discussion of the association was to devise ways and means of breaking down the catalogue houses of the country. That is not true. The



From Left to Right: C. L. Burch, W. J. Konvalinka, Sam T. White and P. C. De Vol.

#### THE HEAVY HARDWARE QUARTETTE.

retail associations and the National Retail Hardware Association have not worked with that thought in view at all, but only with the idea in mind of building up their own business, and these new methods that have sprung up in recent years, if they should spring up by the wayside, it is simply a matter of evolution in business, and cannot be charged to tearing down or breaking down any competition, with that sole view in mind.

Your association here has been built from nothing to more than 800 members at the present time, not along selfish lines, not along lines of opposition to your competitors, but with the sole thought in view of building up by every means possible.

#### President De Vol's Address.

The annual address of President De Vol was an interesting and able presentation of the matters to which it related. We give the following extracts from it:

We have much to pride ourselves on and to be thankful for in the work that has been done in the last 10 years. It has made great progress along the line of advancement, not only to the association as an organization, but to every member that constitutes its membership. We are to-day better merchants in every sense of the word than we were 10 years ago. We have learned the lesson well that our competitor has just as good a right to live and prosper as we have, and instead of

trying to do all we can to outdo him by the cutting of profits, we have also learned the fact that we might profit by getting a little of his experience in a business way; and this is one of the great reasons you are here to-day, and I hope when you have stayed with us and listened to the discussions and talks to be given at this convention that you will go home with a much clearer idea of how you can better your business in some way that you may show a better profit at the end of the year 1908.

#### Retail Hardware Organization a Power.

Reviewing the work of the past year, I would like to mention the fact that it was one of the most active years that we have had in association work, and the retail Hardware merchants are to-day the best organized and most powerful of any of the trade organizations. We have accomplished more and done more good for the retail trade of the country than any other class of men have accomplished, and why is this? Because we have conducted our association affairs in a careful and conservative manner, doing all things in a businesslike way, using our best judgment and making very few mistakes, and the consequences are that we have been growing in strength until to-day we are looked to and considered the leaders in all matters of legislation that are for the interest of the retail trade of the country.

I had the pleasure of attending a conference on trusts and combines in Chicago in October last, and the results of that meeting will be shown in the resolutions and recommendations that have been brought before this session of Congress, which, if carried out, will eliminate most of the evils that have caused the unjust attacks on legitimate corporations and labor. They will curb the power of illegitimate capital and labor organizations; and the time is not far away when the business interests of this country will not be hampered in their progress and foreign and local capitalists will not be so skeptical about making investments in this country as they have been during the past year. Our growth and prosperity will continue on safe and business like laws instead of the uncertain laws that we have had to contend against and which tended to encourage a feeling of unrest that has encircled the American people in the past few years.

#### Confidence in the Future.

While the financial trouble was felt by a great many of us during the month of November, conditions improved wonderfully in the month of December, and we feel to-day that we are on a better footing and a sounder foundation than we were a year ago, and there is no doubt in my mind that 1908 will be the best year that we have had in the last five or six years. We might compare these experiences we have just gone through with the shaking of a large apple tree to remove the rotten apples, leaving the tree with nothing but good, sound apples on its limbs. We will be better off for the experience, and business will be conducted in the future with more care and by more conservative methods than it has been in the past year.

#### Merchants Should Take Interest in Politics.

I would like to suggest right here that it will be to our advantage as retail merchants of the country to go into politics more than we have in the past. If we will interest ourselves in this direction we can do more good for the retail trade of the country than by any other method. Make yourselves known and use your influence in political matters, and when the time comes when you want legislation in some matter that will be of interest to the retail trade of the country you will be in line to act and get what we want and need to better our conditions. The work will be much easier than if you show an indifference toward politics and do not take the interest you should in them. Do not get the habit of interesting yourself so closely in your business that you do not know what the rest of the world is doing. It will do you good to get out of your own business life occasionally and see what is going on outside of the store.

#### Insurance Feature Attracts Members.

The insurance feature of our association has been of the greatest assistance to us in obtaining new members and retaining those that we have. We are doing a large insurance business among the retail trade, and it is very gratifying to the retail merchant when at the end of the year he receives through the mail a rebate check of 40 per cent. for the insurance he carried in the Iowa Retail Mutual Insurance Association, which more than pays his membership in the Retail Hardware Association and leaves him a balance on the right side of the ledger.

This insurance feature is a business proposition that should have your most careful attention. It is good, conservative, reasonable insurance at a very low rate, which will more than pay you for the trouble of joining the association, and if any of you have a dealer in your city that is not a member of this association, you would confer a great favor on the officers of the insurance asso-



elation if you will recommend to this dealer the advantage you have experienced by carrying our insurance.

Mr. DeVol also sketched the organization and progress of the association during the 10 years of its existence, expressed appreciation of the splendid showing made by the Hardware exhibitors, referred to the movement in opposition to the establishment of a parcel post by the Government and the work of the national association in this regard, and also commended the efficient work of Secretary Sale and the directors and members of the Executive Committee during the past year.

#### Secretary's Report.

The report of the association's indefatigable secretary, A. R. Sale, Mason City, was a very interesting and comprehensive document, touching on current matters, which command the attention and require the efforts of the organization, as well as recounting the labors and results of the year. The report showed that the association had a total enrollment to February 15 of 747. One hundred and eighty-seven new members were added during the year, but 65 went out of business, leaving a net gain in membership of 122.

#### N. A. Gladding on Salesmanship.

N. A. Gladding, E. C. Atkins & Co., Indianapolis, was present as the guest of the association, having consented to speak on "Salesmanship," a subject which from his own wide experience and from his well recognized ability as a leader of salesmen, he is well qualified to discuss. Mr. Gladding's address was characteristically pointed and witty, and also commanded attention for its keen insight into character and thorough, practical knowledge of the subject. In the course of his remarks, he said:

Of late years an unusual amount of interest has been manifested in the study of the art of salesmanship, so much so that quite a number of magazines and pamphlets are now being regularly published which are devoted to this subject. These journals are full of "ginger talks" and "pepper talks," and all other kinds of talk, many of which are well seasoned with the salt of common sense and the spice of interest; in fact, there has been so much said and written on this question that it doesn't seem possible that anything more could be thought of. I believe that all these talks and magazine articles should be productive of an untold amount of good, even to the old war horses on the road and in the store, as well as to the new and budding "knight of the grip," or the ambitious young clerk behind the counter, provided they are able to use sufficient discernment to apply the good things that are brought out in such lessons to themselves. Then again, we have those who consider salesmanship such an exact science that they have established schools for the teaching of the psychological, moral and physical sides of the question, upon the theory, I suppose, that this science can be inculcated into the minds of would-be salesmen in such a way as to guarantee them success.

I am not here to decry any of these agencies, because I believe there is much good to be gathered therefrom by any man who takes advantage of them, and who, as I said before, can apply the teachings to his own case.

You know, it is a good deal like the man who sits in church on Sunday and hears the minister get after all the church members who are not "toeing the mark" in one way or another. He thinks what the preacher says is all right, and he can point out to you without any trouble the other fellow to whom it applies.

But I believe in education. It is a good thing for any one in any calling—the more of it the better if it is well considered and along the right lines.

#### The Vital Spark.

This is an age of specializing, and the calling of the salesman has grown to be almost if not a profession, consequently, a thorough study of the fine points of salesmanship can do no harm, even to the oldest man or to the one who thinks he knows the most about it. But, while these things are true, yet to be perfectly frank with you, in my humble opinion, with all the theoretical education on the subject of selling goods that a man may secure, if he has not the "vital spark"—that something indefinable which is born within—then I do not believe that he will ever become what can be called a real salesman of the first quality.

A man may go through college and take a special course at a divinity school, so that he understands all the dogmas and tenets of theology, and yet he may be the very poorest stick of a preacher, and could never convert a lost sheep. Another may take the most thorough course in medicine that it is possible for a

man to secure, and yet when it comes to putting his knowledge into practice as a physician be a flat failure. Again, some men may study law and know all of Blackstone and many law books by heart and yet not be able to win a case. It is easy to discern the difference between the person who simply plays the piano or the violin or any other instrument and the real artist whose touch is a revelation, and can make you hear the birds singing and the rain pattering on the roof or the thunder roll. Some people—most of us, I imagine—might take lessons in painting from the best masters for years and years and then never be able to paint a picture worth looking at. Who will say, therefore, that the true artist or the true genius is not born with what we call the "vital spark" within him? I believe it is the same with salesmanship as with all other professions, the theoretical education will not hurt, but it will help the natural born salesman.

Theory is all right in its place, but, after all, the best method of education in selling goods is experience, or, in other words, the theory without the experience will not accomplish anything in this line of work. It is behind the counter and on the road where we rub up against human nature and can study it to advantage.

You have two men in your store, both equally intelligent and with the same opportunities of learning your business; both equally in earnest, and yet one of them can outsell the other many times over.

#### Two Drummers Will Call on You

to sell their wares; from one of them you like to purchase, the other not. Why is this? In my opinion it is because the successful clerk or salesman has that something within him that attracts and magnetizes the customer. He "gets next" to people without himself just knowing how he does it. It comes natural, that's all. He is the man who can get rid of any old stock at a fair price. You don't have to put him at the bargain counter. Bargain counters don't need salesmen; anybody can wrap up goods when they sell themselves, and the customer picks out what he wants without assistance. I would not attempt in such a short talk to give all the attributes that I think that a salesman should have.

#### A Few Necessary Qualifications.

From a business experience covering 31 years of active work in trying to learn how to sell goods myself, and during which time I have watched the careers of many a successful salesman, I have never seen two of them that approached a customer in exactly the same way. I will, however, mention a few qualities that I think a man should possess to be successful. In the first place, to quote Paul, "He should know how to be all things to all men." He should have a love for his work. A man who shirks or who is careless or indifferent cannot expect to amount to much. Earnestness and enthusiasm are very essential.

He should have confidence in, coupled with a high regard for, his employers; fully acquainted and in sympathy with all of their policies. A man is doing himself and his firm an injustice if he remains in their employ when he is continually criticizing their methods or when he does not agree with their policy. I do not mean by this that he should not make suggestions. The employer or sales manager should always welcome and invite suggestions and in that way help to develop the best, &c.

He should make a special study of all the goods he is trying to sell, thereby having a theoretical if not a practical knowledge of the purposes for which they are made.

He should learn thoroughly all of the important talking points as to the quality of the article presented, and then be able to properly impart such information in a convincing manner to the customer.

Courage is a very important qualification in a salesman. The courage born of confidence in the merits of his goods and of his house, and which can give him "backbone" to stand up for the proper price against the shrewdness of the buyer. He should also try to know the comparative specifications and qualities of his goods with those of his competitors, so as not to be caught up on any of these points.

To the above should be added the three P's—namely, patience, persistence and perspicacity. These three virtues, together with tact and discretion, are among the most prominent that are inborn in the successful salesman.

Another quality that it would not do to overlook is geniality. I do not remember ever seeing or hearing of a man who was cross or crabbed, grouchy or sour, who ever made a success in selling goods. The man who is "sore" at himself or his house better go to laying bricks or something else besides trying to sell goods.

#### Address of W. S. Wright.

The association was fortunate in having as its guest during one day of the convention W. S. Wright, Omaha, president of the National Hardware Association. Mr. Wright

is very popular in Iowa, and was warmly received. In a short and characteristic address, happily combining humor and serious thought, Mr. Wright said, in part:

I want to extend to you as a body the greeting of the National Hardware Association. The National Hardware Association is always interested in the development of retail associations. We are working in very close harmony with them all, particularly through the catalogue house committee.

#### **Loyalty to the Association.**

I think you will appreciate the fact that your officers have put in a large amount of work, and that it is not only your privilege, but your duty, to be loyal to them and to assist them in every means possible by you to build up the most perfect organization to bring the largest results it is possible to accomplish. You cannot get those results without the active co-operation of every member, and when you do that you want in addition to see that every Hardware dealer is a member of that organization. If you have a competitor, I don't know how you can do him more good, and indirectly do your-  
elation.

Right on that proposition I was talking with a man not long ago about the business in his town and how much money he made. "Well," he says, "I didn't do as much as I did last year, but the trouble is I have a competitor, and I don't think he is worth \$500 more now than he was last year, and it makes it pretty hard to build up a business and make money under those circumstances," and he says: "How would you suggest that I get him in line?" I says, "I don't know any other way to do than have him join the association."

#### **Helping Others We Help Ourselves.**

If you get hold of him in that way, you certainly will get results, but that is the best way we can get results, as when we are working for the benefit of others, we are developing our own prosperity just to the same extent that we are benefiting the other fellow. You cannot help the other fellow without you help yourself, and if you take hold with the idea of helping the other fellow, you really will be surprised at the results you will get for yourself.

#### **Good Ideas on the Parcel Post Question.**

I want to make a few suggestions in regard to this Parcel Post proposition. I know that Mr. Burrows has thoroughly covered the matter. It should not be made a narrow proposition or you should not stand on the proposition that it will injure your business. If we take the proposition that it will injure our business, that is not a good proposition at all because that is a strong argument on the other side; but if we can take the point that it will be an injury to the entire country, I believe we will stand stronger than if we make it an individual proposition. I think that if the Parcel Post proposition is a good proposition for everybody except the Hardware dealer, that it is a good proposition for the country, because the retail dealer, comparatively speaking, is a small proposition compared with the entire community, and if it is going to benefit the entire community and only injure the retailer and jobber—but we don't think that.

We oppose it because we think it is a bad thing for the country. I have an idea that ultimately some great proposition will develop by which we may take up the idea and make it a proposition on which the retailer, jobber, farmer, manufacturer and all classes can stand alike, and you don't want to oppose the Parcel Post because the farmer favors it, because that will create a friction between you and your customer. But if some plan can be devised by which on that proposition we can enlist the support not only of the retailer, the jobber and the manufacturer, but the farmer alike, then I think the results will be very beneficial to us and we can work it out on lines that will give results.

#### **How to Conduct a Country Hardware Store**

was the subject of an interesting and practical paper by G. A. Bieber, Ft. Atkinson. Mr. Bieber said that writing papers was not in his line, but that he had responded to the committee's request to introduce the subject in order to draw out ideas from the other members present. In this he was successful, and considerable valuable discussion was evoked, especially in regard to the importance and efficacy of persistency in following up over due accounts. Portions of Mr. Bieber's address are given below:

We began 18 years ago to try the experiment of running a Hardware store, and are still at work, trying to improve our system, for it does not suit us in all particulars yet. However, we have managed to exist and have our share of the things that seem worth while from our standpoint.

In carrying on our work, we aim to clean up our stock and begin our annual invoice on January 2 each year. The winter months are busy with shop work, preparing for the summer months. We make a constant study of our customers' wants for the future, and then when we have discovered them, keep right after them until they have been supplied.

#### **We Study the Markets Closely.**

and all the various methods of buying goods, giving especial attention to combination buying of heavy goods in carload lots, getting best freights and lowest discounts in this way.

#### **We Pay Cash for All Purchases.**

for we find it cheaper to borrow money of the bank and take our cash discounts than to pay the long price for time. The man with the cash always finds the bottom market price.

#### **One Side Line That We Find Makes Good Money**

for the country Hardware man is scrap-iron, rags and metals. This feature of our business gives handsome returns for the money invested. We find in selling the general stock, it is a good plan to make

#### **A Special Drive on Some Particular Thing**

and keep everlastingly at it on our leader. We boost Stoves from August 15 to Dec. 1. Every month and season has its goods for these special efforts.

#### **Fraternalizing with the Farmers.**

We find it pays to go out among our farmer friends and have a quiet friendly chat with them, especially when you find he needs something that runs into money. We don't try to push a sale then, but talk matters over about the crops, his farm and live stock. When he will soon thaw out and broach the subject himself. This gives us our opportunity to present our views on what he wants. We tell him then, "When you get ready to buy, come in and see us." This course hardly ever fails to bring him to your place for his goods. He reasons that the other fellows don't care enough about his trade to call on him about it.

#### **In Handling Our Credits.**

which are a necessary part of a country Hardware store, we send out statements about January 15, and ask for settlement by cash or note. This meets with a quick response, and everything is closed up for a new start.

These people who are always talking about a cash business do not know much about country trade. It is not necessary to lose many accounts. We have not charged off \$300 in 18 years of business. This you will see is a very small percentage, when you consider that every January finds \$3000 to \$5000 outstanding.

We usually cut that amount down to \$600 or \$800 by March 1, and we close them all up by October 1.

#### **Parcel Post.**

This very live question received its full share of attention at the hands of the convention, being treated with some fullness by the president and secretary in their annual addresses, as well as by President Miles of the National Association, whose remarks are quoted elsewhere. The main address on the subject was presented by C. W. Burrows, Cleveland, Ohio, whose position on this question, founded on an exhaustive knowledge of the facts and statistics is well known. Mr. Burrows' splendid address was listened to with the closest attention and was received with great appreciation. The subject was also touched upon by President Wright of the National Hardware Association, whose intelligent and far sighted views are reported in another column. The association adopted the following resolutions:

*Resolved*, That we unanimously oppose any legislation favorable to an extension of the parcel post law, as recommended by the Postmaster-General, as it would be an enormous expense to our Government and is entirely unfavorable to the commercial interests of our country.

*Resolved*, That we are favorable to a postal law reducing the present rates on first-class mail matter to 1 cent per ounce, and would recommend that such a law be passed by Congress and at as early a date as possible.

#### **Heating and Ventilation.**

H. J. Fueller of the Abram Cox Stove Company, Philadelphia, was present by invitation and gave an interesting address on the subject of "Heating and Ventilation." After touching on various practical aspects of the subject from the merchant's point of view, Mr. Fueller went on to discuss the importance of the proper ventilation of homes. He declared himself a partisan of the warm air method of heating on the ground that it was the most sanitary, healthful and strictly in accordance with natural and hygienic laws. He argued that laws should be enacted providing for inspection of the ventilation in



buildings and homes, and said that in his opinion a proper regard for these matters would bring about a decided lessening of ill health and particularly of tubercular disease. Hardwaremen, he asserted, have a great opportunity to follow up this line of work with profit to themselves and benefit to the community.

#### Business Methods in a Hardware Store.

A very interesting and suggestive paper was read by W. H. Stepanek, Cedar Rapids, under the title of "Business Methods in a Hardware Store." Mr. Stepanek has devised a system which he refers to as very complete and satisfactory, and which has been thoroughly tested during a period of 10 years in his own establishment, and announced his intention of issuing it in book form for the benefit of his brother merchants.

#### Convention Committees.

The following committees were announced by President De Vol:

RESOLUTIONS: F. R. Currie, Mason City; C. F. Schmidt, Marshalltown; W. B. Baumgardner, Dubuque; L. H. Kurtz, Des Moines.  
NOMINATIONS: L. C. Abbott, Marshalltown; H. S. Vincent, Fort Dodge; L. H. Kurtz, Des Moines; C. S. Barger, Albion; C. R. Keating, Mount Airy.  
AUDITING: L. Lindenberg, Dubuque; C. E. Haas, Le Mars; L. R. Bailey, Mason City.  
EXHIBITS: J. F. Doty, West Liberty; C. E. Haas, Le Mars; Geo. T. Gadd, Cedar Rapids.  
QUESTION BOX: L. C. Abbott, Marshalltown; F. R. Currie, Mason City; F. P. Marvin, Grinnell.  
PRESS: L. Lindenberg, Dubuque; E. C. Barbour, Fort Madison; A. R. Sale, Mason City.

The genial and popular J. M. Martinek, who acted as sergeant-at-arms, was always at work, and made himself personally responsible for everybody's comfort.

#### The Business Man in Politics

was the subject of an able address by F. F. Jones, Villisca, a member of the association and a State Senator. This is a subject which has received increasing attention from wise merchants in recent years and in the Hardware trade it is apparent that retailers are taking a much greater interest in their local politics as they realize the importance of having a positive influence which they can exert for or against legislation that affects their interests. Mr. Jones brought out with clearness and force many weighty considerations in connection with his subject, and was listened to with close attention.

#### Mutual Insurance Association.

The annual meeting of the Iowa Hardware Mutual Insurance Association was held Wednesday afternoon, before the regular convention session. In the absence of President Miles, the meeting was presided over by Vice-President L. Lindenberg, Dubuque. The annual report of the secretary-treasurer was read by Mr. Sale, who told of the important work which had been done during the year, particularly as regards legislative protection to the insured, and declared that practically all the mutual bodies in the State were now operating on the lines of the Hardware body. He also gave figures showing the splendid volume of business which the association is doing, both in the State and outside of it and the particularly encouraging growth in new business written since the first of the year. C. S. Barger, Albion; L. H. Kurtz, Des Moines, and C. E. Haas, Le Mars, were elected to fill vacancies in the Insurance Association Board, from the sixth, seventh and eleventh districts, respectively.

#### Officers for 1908.

Following is a complete list of the association officers for the ensuing year:

PRESIDENT, P. C. De Vol, Council Bluffs.  
VICE-PRESIDENT, J. F. Doty, West Liberty.  
SECRETARY-TREASURER, A. R. Sale, Mason City.  
EXECUTIVE COMMITTEE: P. C. De Vol, Council Bluffs; L. C. Abbott, Marshalltown; H. S. Vincent, Fort Dodge.  
DIRECTORS:  
District No. 1, A. C. Barbour, Ft. Madison.  
District No. 2, J. F. Doty, West Liberty.  
District No. 3, Thos. Larson, Eldora.  
District No. 4, J. J. Sobelak, Cresco.  
District No. 5, L. C. Abbott, Marshalltown.  
District No. 6, Geo. Haw, Jr., Ottumwa.  
District No. 7, C. T. Gadd, Des Moines.  
District No. 8, F. P. Bollinger, Afton.  
District No. 9, P. C. De Vol, Council Bluffs.

District No. 10, H. S. Vincent, Ft. Dodge.  
District No. 11, C. E. Haas, Le Mars.

#### Entertainment.

The special entertainment feature of the convention was a theatre party arranged for Wednesday evening and tendered by the Cedar Rapids Hardware merchants. The regular vaudeville programme was supplemented by several specialties introduced for the occasion which were received with storms of applause by the guests, who entirely filled the house. The principal feature of the evening and that which met with the most enthusiastic reception was the work of the *heavy* Hardware quartette, composed of P. C. De Vol, Sam T. White, W. J. Konvalinka and C. L. Burch, the combined weight of the aggregation being exactly 1010 lb. If the music rendered was not as heavy as the quartette, it was entirely satisfactory to the auditors and was received with cheers.

#### Convention Notes.

Besides hearing the heavy Hardware quartette, referred to above, the convention was favored at its daily sessions with a couple of selections by an excellent male quartette, which gave much pleasure.

Sincere regret was felt that A. T. Stebbins of Minnesota vice-president of the National Retail Hardware Association, was unable to make connections so as to be present and address the convention, as he was scheduled to do.

An interesting and suggestive address was delivered by R. E. Saberson of the Berkeley System Company, Sioux City, Iowa, on the subject of advertising. Mr. Saberson represents a house which is preparing advertising matter for retail merchants, with the special object of meeting catalogue house competition. The service is endorsed by many who have tried it.

H. S. Vincent, Ft. Dodge, ex-president of the association and one of its most popular and active members, read an entertaining report of the National Retail Hardware convention held in Boston last June. The Iowa Association is justly proud of the prominence of its delegation to that convention.

At the closing session of the convention it was arranged to hold a traveling men's hour, at which salesmen were especially invited to be present and participate in discussing matters of mutual interest. Unfortunately, owing to the fact that this was one of the last items on the programme, few stayed to attend it, a fact which was regretted by the members. It was arranged to give this feature a more prominent position next year and appoint a committee from the traveling men to assist in preparing for it.

Many availed themselves of the invitation of the Iowa Radiator Company and the Iowa Windmill & Pump Company to visit their factories in Cedar Rapids.

At the Thursday session of the convention, following the address of Mr. Gladding, H. B. Gordon, Norvell-Shapleigh Hardware Company, St. Louis, was introduced and gave the members an interesting informal talk on the organization of a jobbing house and methods of carrying on a jobbing business. Mr. Gordon made some valuable suggestions to the retailers relative to their correspondence with wholesalers which, if followed, would prove convenient and time saving for both. The Norvell-Shapleigh Hardware Company occupied a booth at the exhibit, where, in addition to Mr. Gordon, C. O. Janssen, G. T. Bourne, Z. L. Brewer and F. L. Hormel were on hand to meet their customers.

Among the many representatives of jobbing houses present the following were noted: Trout Hardware Company, Chicago, represented by G. W. Trout and F. E. Gardner; Drake Hardware Company, Burlington, Iowa, represented by S. H. Jones, G. A. Ray, N. G. Ballyntine and D. R. Ziegler; Brown-Hurley Hardware Company, Des Moines, represented by W. S. Brown, J. E. Shearer and B. G. McCarn; Cutler Hardware Company, Waterloo, Iowa, and Haw & Simmons, Ottumwa, Iowa.

The United States Stamping Company, Moundville, W. Va., represented by J. W. Sleight, had an exhibit of Blue and White Enamelware in a room at the Montrose.

The Simmons Hardware Company, St. Louis, occupied a suite at the Montrose Hotel, where F. J. Wachter, H. B. Christy, H. M. White and George Parmenter, the company's representatives, received many friends and displayed a handsome line of samples.

Several manufacturers were represented in Cedar Rapids who secured no space in the Hardware Show. Among these may be mentioned F. E. Myers & Bro.,

Ashland, Ohio; Parry Mfg. Company, Indianapolis, Ind.; Warren Paint Company; Peabody Buggy Company, Fostoria, Ohio; Lowe Bros. Company, Dayton, Ohio; American Wringer Company, New York; Marshalltown Trowel Company, Marshalltown, and Klauer Mfg. Company, Des Moines, Iowa.

### The Hardware Show.

The Hardware Show was an emphatic success, being splendidly managed and completely filling the large auditorium secured for its accommodation. The exhibits were numerous, handsome and varied, and attended by able representatives. After the first day the hall was thronged, both morning and evening, but was wisely closed afternoons, to avoid interfering with convention sessions. Following is a complete list of the exhibits and the representatives in charge.

- E. C. ATKINS & Co., Indianapolis, Ind.: Saws and Saw Tools, Trowels, Files, &c. Represented by A. A. Teel, T. F. Barbour, P. L. Edwin and S. M. Perrigo.
- AMERICAN STEEL & WIRE COMPANY, Chicago: American and Elwood Fence. Represented by R. A. Beak, T. H. Fuller, E. M. Ryan and L. P. Rider.
- AUER REGISTER COMPANY, Cleveland, Ohio: Auer Side Wall and Modern Steel Floor Registers. Represented by D. J. Metzger.
- BERKLEY SYSTEM COMPANY, Sioux City, Iowa: Merchants' co-operative system of meeting catalogue house competition. Represented by R. E. Saberson and F. L. Brownlee.
- BLACKSTONE MFG. COMPANY, Jamestown N. Y.: Blackstone Rotary and Low and High Pressure Motor Washing Machines. Represented by D. P. Hicks.
- BROWN SPRING ICE SKATE COMPANY, Webster City, Iowa: Brownlee Skates. Represented by B. R. Brown.
- CARBORUNDUM COMPANY, Niagara Falls, N. Y.: Sharpening Stones, &c. Represented by W. R. Embleton and H. A. Eaton.
- CEDAR RAPIDS FOUNDRY & MACHINE COMPANY, Cedar Rapids, Iowa: Economy Furnaces. Represented by T. Newcomb.
- CHANDLER PUMP COMPANY, Cedar Rapids, Iowa: Large exhibit of an extensive line of Pumps, &c., Iowa Radiator Company's Steam and Hot Water Boilers and Stover Mfg. Company's Windmills and Feed Mills.
- COLUMBIAN HARDWARE COMPANY, Cleveland, Ohio: Tubo Steel Registers, Columbian Floor Hinge and Screen Door Fix'n's. Represented by L. A. Wood and C. F. Hunter.
- DAIRY QUEEN CHURN COMPANY, Monmouth, Ill.: Churns. Represented by S. R. Doris.
- DENNING WIRE & FENCE COMPANY, Cedar Rapids, Iowa: Denning Fence, Gates, Barb Wire, &c. Represented by L. L. Barnum.
- DES MOINES MFG. & SUPPLY COMPANY, Des Moines, Iowa: Pressure Tanks and Water Supply Systems, New Life Heating Boilers and Mac Warm Air Furnaces. Represented by J. C. Huntoon.
- C. DE WITT WAGNER, Cedar Rapids, Iowa: Wagner Elbow Shears. Represented by C. De W. Wagner.
- DOVER MFG. COMPANY, Canal Dover, Ohio: Asbestos Sad Irons. Represented by M. H. Snyder.
- E. I. DU PONT DE NEMOURS POWDER COMPANY, Wilmington, Del.: Advertising exhibit.
- EXCELSIOR STOVE & MFG. COMPANY, Quincy, Ill.: National Stoves and Ranges, Leonard Refrigerators and Reliable Gasoline Stoves. Represented by W. J. Fisher, R. B. Styles, R. L. Houck and H. D. Walker.
- FULLER-WARREN COMPANY, Milwaukee, Wis.: Stoves, Ranges and Heaters. Represented by J. L. Potter, W. B. Barney and G. C. Barney.
- GABEL MFG. COMPANY, Hawkeye, Iowa: Gabel's Twentieth Century Pig Forceps. Represented by Chas. Gabel, F. A. Daudel and W. A. Hathaway.
- GLASCOCK BROS. MFG. COMPANY, Muncie, Ind.: Glascock Racers, Baby Jumpers and Walkers, &c. Represented by J. W. Glascock.
- GLOBE MFG. COMPANY, Perry, Iowa: Quicker Yet Washer, Represented by J. C. Bryan.
- GLOBE STOVE & RANGE COMPANY, Kokomo, Ind.: Globe Stoves and Ranges. Represented by J. A. Hutchings and E. E. Raymer.
- GREEN FOUNDRY & FURNACE WORKS, Des Moines, Iowa: Furnaces. Represented by F. O. Green, M. Breed and C. H. Burch.
- HALL-BENEDICT MFG. COMPANY, Monticello, Iowa: Steel Safety Hoists and Steel Tackle Wire Stretcher. Represented by M. D. Kehoe.
- HART & COOLEY COMPANY, New Britain, Conn.: Wrought Steel Registers, Lockers, &c. Represented by A. I. Grocock.
- HAWKES FLAT IRON COMPANY, Chicago: Comfort Self-Heating Gasoline Flat Iron. Represented by F. M. Hawkes.
- HAWKEYE INCUBATOR COMPANY, Newton, Iowa: One Minute Washer and Lever Churn. Represented by F. Payne and A. W. Jackson.
- HUNT, HELM, FERRIS & Co., Harvard, Ill.: Hay Carriers, Hangers and Hardware Specialties. Represented by G. H. Chapman.
- IDEAL LIGHTING COMPANY, Davenport, Iowa: Gasoline gas lighting system in full operation. Represented by H. Walther and F. Lee.
- F. C. JOHNSON, Stillman Valley, Ill.: Axle Grease, Harness Dressing, &c. Represented by F. C. Johnson.
- KEITH FURNACE COMPANY, Des Moines, Iowa: Monitor Furnaces and Registers. Represented by B. R. Franke and Geo. Willis.
- KELLY AXE MFG. COMPANY, Charleston, W. Va.: Axes, Hatchets and Scythes. Represented by J. P. Kelly and H. D. Wilkes.
- KOSTLAN MFG. COMPANY, Traer, Iowa: Washing Machines. Represented by F. Kostlan.
- LENNOX FURNACE COMPANY, Marshalltown, Iowa: Torrid Zone Furnaces. Represented by F. J. Kiesel, T. I. Wasson and J. W. Zuck.
- LOETSCHER-RYAN MFG. COMPANY, Dubuque, Iowa: Sad Irons, Registers, Dampers, Anvils and Hardware Specialties. Represented by E. R. Calvert and E. J. Ryan.
- N. W. LUNDY, Marshalltown, Iowa: Lundy Double Blast Soldering Furnace. Represented by N. W. Lundy.
- LYONS SPECIALTY COMPANY, Lyons, Iowa: Mail Boxes, Petersen Barn Door Latches, Handy Hog Waterer, Young's Strainer Cut Off and Bull Blinds. Represented by W. Petersen.
- MCCASKY REGISTER COMPANY, Alliance, Ohio: McCasky Account Registers. Represented by B. P. Robinson and R. A. Green.
- MAHER & SON, Preston, Iowa: Lightning Rods. Represented by J. J. Maher.
- MAJESTIC MFG. COMPANY, St. Louis, Mo.: Majestic Ranges. Represented by A. Collins.
- MALLEABLE STEEL RANGE MFG. COMPANY, South Bend, Ind. Represented by H. C. Fowler and R. E. Adams.
- MARLIN FIRE ARMS COMPANY, New Haven, Conn.: Rifles and Shot Guns. Represented by Chas. Porter.
- MARSHALLTOWN DROP FORGE COMPANY, Marshalltown, Iowa: Wrenches and Combination Tools. Represented by J. W. Lodwick.
- MILWAUKEE CORRUGATING COMPANY, Milwaukee, Wis.: Steel Ceilings, Conductor Pipe, Eaves Trough, Elbows, Kuehn's Korreck Kutoff and One-Piece Miter. Represented by C. Phillips, W. Horn and P. E. Sauerwein.
- MINNEAPOLIS HEAT REGULATOR COMPANY, Minneapolis, Minn.: Minneapolis Heat Regulator. Represented by L. A. Norton.
- NEWTON DISC PLOW COMPANY, Newton, Iowa: Newton Disc Plows. Represented by J. W. Watson.
- NEY MFG. COMPANY, Canton, Ohio: Hay Tools, Hangers and Hardware Specialties. Represented by L. Stern and J. M. Mobley.
- OHIO VARNISH COMPANY, Cleveland, Ohio: Chi-Namel Varnishes and Finishes and self-graining process. Represented by G. C. Powers.
- ONEIDA COMMUNITY, Oneida, N. Y.: Community Silverware, Traps and Chain. Represented by W. E. Scanlan and J. C. Gibson.
- OSMUNDSON SPADE MFG. COMPANY, Perry, Iowa: Buffalo Staple Puller, One Minute Post Hole Digger and Tiling Spades. Represented by H. Osmundson.
- PARSONS HAWKEYE MFG. COMPANY, Newton, Iowa: Grain Grader, Washing Machine and Hog Waterer. Represented by C. C. Long.
- PERRY MFG. COMPANY, Perry, Iowa: Apex Coaster Wagon, with runner attachment, and Stamped Steel Specialties. Represented by E. M. Heule.
- PITTSBURGH STEEL COMPANY, Pittsburgh: Pittsburgh Perfect Fence. Represented by W. D. Ellsworth and C. A. Cochrane.
- PRITCHARD-STRONG COMPANY, Rochester, N. Y.: Prisco Lanterns and Money-Back Metalware. Represented by W. T. Richards.
- JOHN PRITZLAFF HARDWARE COMPANY, Milwaukee, Wis. Represented by Frank Hughes, W. J. Konvalinka, N. B. Carpenter, J. Gruenwald and O. E. Wynne.
- ROBERTS HEATING & VENTILATING COMPANY, Minneapolis, Minn.: Storm King Special Furnaces. Represented by G. A. Anderson.
- ROCK ISLAND TOOL COMPANY, Rock Island, Ill.: Vises. Represented by A. S. Lindeblad and C. E. Shields.
- ST. PAUL ROOFING, CORNICE & ORNAMENT COMPANY, St. Paul, Minn.: Steel Ceilings and Roofing and Coat-Roid Rubber Roofing. Represented by A. M. Smith.
- STANDARD OIL COMPANY, Chicago: New Perfection Wick Blue Flame Oil Stoves, Perfection Heaters and Rayo Lamps. Represented by W. J. Houlton and S. A. Sergeant.
- STANLEY WORKS, New Britain, Conn.: Wrought Steel Butts, Hinges, &c. Represented by A. J. Grocock.
- STOWELL MFG. & FOUNDRY COMPANY, Milwaukee, Wis.: Registers, Hay Tools, Hangers and Hardware Specialties. Represented by W. A. Coffman.
- STURGES & BURN MFG. COMPANY, Chicago: Milk Cans, Dairy Pails and Jack Frost Freezers. Represented by C. E. Holmes.
- THATCHER FURNACE COMPANY, Chicago: Boilers and Furnaces. Represented by R. C. Cook and S. E. McLaughlin.
- THOMPSON BROS. & Co., Newton, Iowa: Speed Washer. Represented by F. E. and J. C. Thompson.
- UNITED STATES REGISTER COMPANY, Battle Creek, Mich.: Jones Side Wall Registers. Represented by A. O. Jones.
- VERMONT FARM MACHINE COMPANY, Bellows Falls, Vt.: United States Cream Separator. Represented by T. F. Tierney and N. A. Ellegard.
- VICTOR MFG. COMPANY, Leavenworth, Kan.: Washing Machines, Wringers and Ironing Boards. Represented by F. J. Tallant, G. W. Fleming and W. A. Thompson.
- VOSS BROS. MFG. COMPANY, Davenport, Iowa: Washing Machines. Represented by W. H. Voss and A. Clifford.
- WAHLE FOUNDRY & MACHINE WORKS, Davenport, Iowa: Snowball Rotary and Quick Action Lever Washers. Represented by A. Nielsen.
- WATERLOO REGISTER COMPANY, Waterloo, Iowa: Waterloo Side Wall Registers, with vapor pan; Favorite Side Wall Registers, Wall Cold Air Faces, Semi-Steel Floor Registers and Cast Faces and No-Rivet Damper Clips. Represented by J. O. Knox.
- WESTERN ROOFING & SUPPLY COMPANY, Chicago: Carey's Roofing, Pipe Coverings and Asbestos Goods. Represented by R. B. Murdock.
- WHITE LILY WASHER COMPANY, Davenport, Iowa: Washing Machines and Gasoline Engine. Represented by S. T. White, B. L. Schmidt, J. C. Foss and Ted Rosche.

THE HARTFORD MACHINE SCREW COMPANY, Hartford, Conn., announces that it has opened a New York City office and warehouse at 88-90 Walker street, with P. B. Genger as manager. Mr. Genger was formerly sales manager for Patterson, Gottfried & Hunter, Ltd., New York. The Hartford Machine Screw Company will carry at its New York establishment a complete stock of Set and Cap Screws, Taper Pins, Finished and Case Hardened Nuts, and practically all other goods shown in its catalogue.

THE LUTHE HARDWARE COMPANY, Des Moines, Iowa, wholesale Hardware, has increased its capital from \$100,000 to \$300,000 in order to provide for the large expansion which has taken place in its business.

THE COLUMBIAN HARDWARE COMPANY, Cleveland, Ohio, is distributing a unique advertising novelty, called the "Annual Pay Envelope," in which attention is called to its various products.



## Indiana Retail Hardware Association.

**B**ACKED by a membership unwaveringly strong in support of its aims and purposes, and constant in all efforts for the widening of its scope and power, the Indiana Retail Hardware Association confidently expects each of its successive meetings to excel in interest and importance its predecessor. It was therefore but the realization of a looked for result that the ninth annual convention of this body, held at Indianapolis, February 18-21, was in no respect disappointing. In the face of a blizzard of wind and snow that raged all day Tuesday, impeding trains and making travel difficult and unpleasant, the convention opened with a good attendance, which on Wednesday had grown to record breaking numbers. At that session about 750 persons, of whom nearly 100 found standing room only, were packed in the assembly room of the Denison Hotel, where the business meetings of the convention were held. It may be observed that the entire audience was comprised exclusively of associate and active members and others deeply interested in association work, a fact which in itself bespeaks the appealing force and power of the principles underlying this movement. The increasing popularity of the Question Box is everywhere apparent, and was notably emphasized at the Indiana Convention when, toward the close of the session on Thursday, a suggestion of adjournment was met by a motion to continue the Question Box half an hour longer, which prevailed. With the addition of somewhat more than 150 new members gained in the past year the Indiana association now has enrolled nearly 80 per cent. of the Hardware firms doing business in the State.

### The Hardware Exhibition.

Whatever objectionable features may have attended the earlier attempts at holding trade exhibits in conjunction with its conventions have been overcome since the association has undertaken the management of these displays. The orderly manner with which they are conducted is a source of gratification to all concerned, and adds much to their interest and profit. In deference to the wishes of the organization all exhibits were shown at Tomlinson Hall, in spaces provided by the management, none being installed in hotel rooms or other places, as has been done heretofore. The displays were highly creditable to manufacturers and the association, both as respects the quality and variety of goods exhibited, and their artistic arrangement.

All available space on the floor and in the galleries of the hall were occupied and prior to and succeeding the business meetings of the convention, which were held in the afternoons only, there was a constant stream of visitors circulating through the building. Admission was limited to members and exhibitors, and the crowding and confusion attendant upon admission of the general public was thus avoided. This and other thoughtful provisions for the comfort, convenience and pleasure of visitors and exhibitors was due to the able and untiring efforts of the Committee on Exhibits, composed of Charles E. Hall, Albert De Prez and Otto E. Lang; to these gentlemen belongs the credit for one of the most successfully conducted Hardware exhibits ever shown in connection with the annual meetings of the association.

### President Frame's Address.

In his annual address President Frame referred to the encouraging progress made by the association during the year, and expressed the hope that even the small minority of Indiana Hardware men yet outside of the organization would at no distant day be included in its membership. High appreciation of the Hardware exhibits was expressed, and it was urged that they should not only be carefully examined, but that wherever possible the manufacturers represented should receive the substantial encouragement of business patronage. Continuing, the president spoke, in part, as follows:

Another year has passed into history and to us perhaps it has been quite the same as many others, yet some things have happened to the experiences of the year that

have helped us in our endeavor to make the world and ourselves better. We have all taken our annual inventory, and while the balance is on the right side, I feel safe in saying this balance is not as large as we felt it ought to be. Looking back over the year let us mark the spots where we have been weak. If our bills receivable are more than they should be, why not make

### A Firm Resolution to Be Better Collectors?

How many of us lose discounts by being lax with our collection? I am not going to ask how many have outstanding accounts for Binder Twine, Wire Fence and other staples, that we should have had our money for, for the reason that it would be embarrassing. I am afraid that as a rule we are not good collectors. Our business has suffered in the last 90 days from fear—fear as to what might result from conditions that existed in money centers; but at this time the most skeptical has been assured that the country as a whole is as sound as a dollar. And as factories that have been closed, some entirely and others working only half time, are resuming their usual activities, we have every reason to look for business soon to be up to its former standard.

### How to Get Customers in Our Store.

how to sell them and get them to come back again, are questions that concerns us most at this time. In every town and city there are department stores which continually strive to attract our customers by advertising very cheap articles in the Hardware line at exceedingly low prices. While these stores have sold some goods people generally have too much good sense to go to a store the second time to trade when they were sold a polished cast tool for solid steel, and told that it was as good as they could buy anywhere. When a man is sick, he naturally goes to a physician and not to a drug store for a prescription, and it should be our endeavor to impress it upon our people that the place to get what they want in the general Hardware lines is at the Hardware store.

### We Are Specialists.

professional men, so to speak, and we should be thoroughly posted in our line, familiar with all the new things and be in a position to show our goods in such a manner that it will be an easy matter to convince our customer that he can get what he needs at our store much better than at a lumber yard or any other place.

Buy good goods, get enthusiastic on the quality, talk them to your customer the way the traveling man did who sold them to you; learn all you can about how they are manufactured, tell your customer all you know about them—he'll listen. This will give him confidence in your ability and judgment and you are sure to see him back in your store when he wants to buy again.

You cannot make a good customer by selling a cheap article. Besides, good goods always pay a better profit than poor ones. We have printed on our stationery as a motto, "There is nothing too good for our customers."

### Season Goods Orders.

It is now the general custom to place our orders for seasonable goods quite a long time before we need them. With a few items this is advisable, but to the extent that it is now practiced, my opinion is that it is a mistake. The jobber is the natural distributor from the factory to the retailer and it is his business to have the goods in stock when the demand comes. The quantities we buy for the year are usually based on the amount that was sold the year previous.

Having placed our orders with the jobber early, usually for factory shipment, if an extraordinary demand springs up like that, for instance, of Clipping Machines last year, our jobber's stock is soon exhausted. Mr. Jobber has figured that his trade had bought about all they would use and naturally had not stocked up much on these goods, with the result that we had a very hard time to get our orders filled and frequently lost sales on this account. We are asked to take goods into our store often two to four months before they are needed, and we must run the risk of fire and frequently a loss by a change in price.

### The Natural Mission of the Jobber

is to carry such stocks of seasonable goods in season as to be able to fill orders for his trade under ordinary conditions, and his facilities and ability as a jobber should enable him to do so. We, on our part, cannot sell customers out of season, and until some one can show us how to sell Poultry Netting, Screen Wire, Ice Cream Freezers and Scythes in December, and Axes, Cross Cut Saws, Skates and Tank Heaters in July, I am of the opin-

ion that it would be better for us, as well as our friend the jobber, to get our goods in season when we want them, than to try to anticipate our wants so far in advance.

#### Suggestions in Regard to Meeting of National Body.

When J. L. Fulton, a delegate to the national convention at Boston, was called upon for his report he appeared on the platform with a roll of manuscript which may be conservatively estimated at 300 pages. A voice from the audience cried, "Don't read it; we'll take your word for it." It proved, however, to be the official report, but the one which Mr. Fulton read proved to be a most interesting description of the incidents leading up to and including the work of the convention. It concluded with the following summary, which will be found to embody some pertinent suggestions:

In reviewing the work of the convention I am constrained to express the criticism that its work, while containing much instructive and stimulating matter, was not all that it might or should have been. In my opinion it would have been more profitable, considering the national scope of the gathering, to have spent more time in the consideration and discussion of broader ques-

of the organization. They debated and disposed of propositions from the standpoint of predeliberation and preparedness.

#### These Leaders in Thought and Action

have been sent to the convention in the past largely as the result of good judgment and appreciation on the part of their constituents, without any system or rule in such matters, but there is always in the air, and quite right, too, a feeling that the honors should be distributed, and in order to both satisfy this laudable and proper sentiment, and to perpetuate the strength and effectiveness of the delegations of the national convention, I suggest some system that will produce this desirable result. I make the suggestion that the president, first vice-president and secretary shall, by reason of their office, be delegates for three years in succession, and that the balance of the delegation be chosen to serve two years. Some such plan as this would insure a reasonably experienced delegation. It would be an incentive to the delegate to prepare himself for the important and serious business mission with which he is honored.

#### More Time Should Be Devoted to Business.

I have but one other mild criticism to express. There was too much diversion in the splendid list of entertainments that had been provided. I frankly confess that I



From Left to Right: Albert De Prez, Committee on Exhibits; Charles E. Hall, Treasurer; M. L. Corey, Secretary; C. B. Frame, Ex-President; Fred W. Bartholomew, First Vice-President; Walter B. Creed, President.

tions of the policy in the work of the national body; the extension of its usefulness to the constituent associations, such as devising and improving the methods of association work, and of extending their influence and increasing their activities.

#### It Should Be the Province of the National Body

to thoroughly discuss and thresh out those problems and determine on a clearcut and definite policy to recommend to the several State associations. The national conventions are the best and only practical time for the State secretaries to get together. They should have more hours set aside for their especial purpose. It has always seemed to me that they have not devoted sufficient time to the discussion of their special work, to bring out the best that could be developed for the good of their constituents.

The National Association should be the clearing house of the State conventions; a board of directors, so to speak, composed of the strongest and ablest business talent that can be gathered from the several States. In my opinion there should be

#### A Better System of Representation to the National Meetings

adopted by the State associations; one that will insure stronger and more effective work as the years go by. In reviewing the work of the several national conventions that I have attended, I was naturally impressed with the influence and effectiveness of those States whose delegates were made up of men who had been intrusted with the mission year after year. They came with the problems of the convention well in hand. They had given time and mind unselfishly to study the needs

accepted and enjoyed them as much as anybody else, but I honestly think there should be less of such features and more time devoted to the business for which we are convened. The entertainments were generous, excellently planned and executed, and thoroughly enjoyed by all participants, and the New England Association will long be remembered by the delegates for its splendid hospitality.

#### Governor Hanly on Prison and Reformatory Labor.

A conspicuous feature of the proceedings on Wednesday was an address delivered by Governor Frank J. Hanly upon "State Business Problems." The subject matter of this address relates to the difficulties encountered by the State in furnishing employment for the inmates of its penal institutions. It will be recalled that two years ago the manufacture of Binder Twine was begun at the State penitentiary, Michigan City, Ind., and the product has hitherto been sold direct to the consumers at prices that would not admit a profit for the merchant. This matter has been the subject of conference between the State officials and those of the associations at several meetings held during the year. The questions involved were fully and frankly discussed in a spirit of fairness and due regard for the equities and interests of all concerned, with the result that a harmonious understanding of the situation was finally evolved. It was therefore the purpose of the Governor to present before the members of the association the conditions confronting



the administration in its efforts to harmonize the business interests of the State with the measures provided for the humane care of convicts in the penitentiary. After reviewing the complex conditions of modern life which have placed upon the State the burden of caring for a large number of helpless persons, including the insane and helpless boys and girls, together with a prison population of more than 1200, he spoke in substance as follows:

Indiana takes just pride to-day in the character of her State penal institutions. They have been removed from the influence of partisan politics and the work accomplished in this direction has been the subject and attention of favorable comment in every State in the Union. The cost of their maintenance and administration, amounting to \$3,000,000, is the price you pay for altruistic work in behalf of the helpless and criminal classes. The question arises

**What Shall We Do with the Boys in the Reformatory and the Men in the State Prison?**

In endeavoring to provide employment for this population we have on the one side free labor, which is justly sensitive of the encroachment of such competition in production, and on the other hand we have the hard headed business men, like yourselves, who fear that the operation of prison factories may be detrimental to your interests. It is obvious, however, that the State cannot keep its prisoners in idleness.

It would not in the first place be a good business proposition to do so, since it would add greatly to the amount you are already paying for their support. There is, however, another side to this question, which to my mind is of paramount importance, and one which I feel will appeal to you with striking force. I refer to the indisputable fact that imprisonment without employment means insanity. What citizen is there among you who would be willing to take the responsibility for the establishment of a prison system that, through enforced idleness, would deliberately expose convicts to the horrors of such a fate. Naturally you turn with abhorrence from any such suggestion.

Moreover, there could be no economic gain from such a course. There is, as you know, a chance for the reformation of these unfortunates if at the end of their sentence they can be restored to the community sound in mind and body; but if driven to insanity through enforced idleness they become a permanent charge upon the community; and the tax upon you for the support of these institutions must, under such circumstances, grow larger and larger.

**Looking at the Matter from Another Point of View.**

say, for instance, that a boy in early life with no element of viciousness or criminality in his nature, through unfortunate associations or environment, makes a mistake, commits some act that is construed as an infraction of the law, and under sentence therefor serves a term in the State reformatory. I submit to you in all fairness as men, is not that boy entitled to be so treated at the hands of the State that he may have an opportunity to be a better rather than a worse man at the expiration of his term? And you know that he cannot have this opportunity if kept in confinement without work. I take it therefore that the question is not debatable and you will all agree with me that

**Some Means Must Be Found to Furnish Work to Inmates**

of our State prison and reformatory that will keep them actively employed. The question therefore arises: What shall these men do? It is plainly seen in view of modern industrial conditions that such employment must be found as will bring them into competition with free labor as little as possible. Working along this line we have established trade schools in the reformatories where the boys are taught reading, writing, arithmetic, manual skill and, better than all else, are instructed in the higher concepts of citizenship. As a result of these efforts I am glad to say that 60 per cent. of those discharged go out and regain honorable and useful places in society.

**In Seeking Some Avenue of Employment**

for the prisoners in the Michigan City penitentiary we found that no Binding Twine was manufactured in the State of Indiana, and because this product promised little competition with the free labor of our State, it seemed advantageous to establish the plant. The question before the administration has been whether or not this product would find a market in Indiana. I recognize the fact that you are business men and that out of the profits of your business you must live, but I am conscious that in your loyalty, before you are Hardwaremen you are citizens of Indiana. As such citizens, therefore, do you not owe something to the effort we are making to find employment for the inmates of our prison?

Last year we sold a large part of our product to the

farmer direct, but in marketing it in this manner we soon found how sensitive you were through the communications we received from Hardwaremen all over the State. You said to me, "Our interests are directly involved. We don't ask unfair things, but we do ask that the product of this plant shall be handled through regular trade channels." This seemed fair to me, and so I am here to say to you now that this year, if you take this product, you may have it on a basis of profit that will justify you in handling it. I want you to remember that I do not lose sight of the business proposition involved in this matter. I know you will buy where you buy the cheapest, quality considered, but I put it to you as loyal citizens that you owe an obligation to the State of Indiana

**To Buy Our Product if You Find It Equal**

in price and quality to that of other twines offered in the market. Examine it and see for yourselves how it compares with other twines. It is not fair, however, to take the word of the representatives of large corporations outside of the State as to its quality. But they say it is prison made. Yes, that is true; but go back to the moral question. Here is an opportunity to give 200 men employment that will not compete with free labor in Indiana. Our factory must go on; there is no choice. We are relying upon your support; but if it is denied us we will be compelled to go back to our former plan and sell direct to the farmer. We are not insensible to the conditions of competition and to the best of our ability we will endeavor to meet competitive prices, quality for quality, and think we will be able to do it.

In conclusion the Governor read a letter written to the trade by an outside manufacturer of Binder Twine which contained a number of statements derogatory to the prison product which were emphatically declared to be untrue. He also referred to a subterfuge which he charged had been used to discredit the prison Twine and which he characterized as unworthy of any man who enjoyed the privilege of citizenship. It was stated that an instance had been discovered where a bale of prison Twine had been purchased, the contents taken out and replaced with Twine of poorer quality, which was then exploited as prison Twine. In order to ascertain the sense of the convention as to their willingness to handle the output of the prison factory the members were asked for an expression, which showed an overwhelming majority in favor of the proposition.

**Report of Secretary Corey.**

In submitting his eighth consecutive annual report Secretary M. L. Corey stated that in two matters of vital importance to the welfare of the organization the developments of the past year had been most gratifying. These related to the substantial increase that had been made in its financial and numerical strength. The treasury balance was referred to as probably the largest ever reported by any State Hardware association, while more members had been added to the roster than in any former year of the association's existence. The body is now represented by members in 290 towns in the State, of which Indianapolis leads, with a membership of 24; Terre Haute second, with 12; Muncie follows, with 9; while 16 others have not less than 5. The following extracts are taken from the report, which throughout was characteristically practical and instructive:

It is the opinion of your secretary that the Hardware show in connection with our larger conventions is a permanent affair. There is too much genuine advantage, both to dealer and manufacturer, for it to be considered as temporary. No article or line will ever become so firmly established with the trade that its manufacturers can afford to ignore such a chance of showing their product, and especially any changes or improvement. No advertising will ever prove more effective than actual demonstration and personal explanations to the men who sell the goods. That these exhibits are appreciated by our members is clearly shown by the ever increasing attendance at our annual meetings.

**The Exhibit Feature Is Gradually Working Toward a Business Basis**

and more orders are being placed than formerly. We certainly believe it will pay any Hardware dealer well to visit each exhibit; make yourself known and have a talk with the man in charge. Get all the trade information and business pointers you can, and if you see anything you think would be of advantage to add to your stock, buy a sample. It lies entirely in your hands to make these Hardware exhibits a huge success. I do not

believe the Indiana Association will ever again consent to allow exhibits in our hotel headquarters. We, therefore, urge you, as loyal members, to discountenance any attempt in this direction. It is also unfair to allow representatives of houses making no exhibits to claim your attention and attempt to sell competing lines, when they discover you are interested in some particular display. Last year there was some complaint made by exhibitors, and we feel it is only necessary to mention the matter at this time.

#### Hardware Mutual Fire Insurance.

There has been a great gain this year in the amount of Hardware mutual fire insurance carried by our members, at the same time we do not know of a serious loss. The Wisconsin secretary informs me they have now \$204,000 in risks in Indiana. Minnesota has \$700,000 insurance in our State, and both these companies are paying 50 per cent. rebate. The National and Iowa have perhaps \$300,000 more, making about \$1,250,000 that the old line companies have lost by their own greed and discrimination against Indiana Hardware men. There is no question about your having the right to buy mutual insurance outside our State, although we are informed that statements have been made by interested parties to the contrary. Neither is there any doubt that you will secure an honest adjustment in case of loss. Minnesota tried to get admitted legally into our State, but the absurd provision in our insurance laws that requires \$100,000 in notes, and will not consider the same amount in cash as an equivalent, prevented.

#### Permanent Association Emblem.

The benefit of adopting a uniform association button or emblem by our affiliated State organizations has often been mentioned. Indiana is the first State to try the experiment, and the triangle button you have received is intended to be worn during the entire year as a constant reminder that you stand for progress and fair business methods. At least 80 per cent. of the Hardware firms in Indiana now belong to our association, and if we all wear the button our strength will be continually impressed upon those who are inclined to trespass upon our business or territory. Other States can use this same button by simply changing the name of the State in the bottom link. The initials in center stand for the National Retail Hardware Association, if not the best and strongest, it certainly is one of the best retail organizations the world has ever seen.

#### The Trade Press.

The Hardware trade is particularly fortunate in being represented by progressive, wide awake journals, and our associations owe much of their strength and success to these faithful champions. No one knows better than your secretary the constant demands upon your time and attention that come from your business, but we also feel that the successful merchant in these days needs every assistance he can secure and every new idea should be considered with a view of making some improvement in your store methods. The trade papers are full of suggestions and experiences; read them carefully, take time to do it, for it will pay. The *National Hardware Bulletin* has grown and developed into a Hoosier office, and under Hoosier care. It is your property, and aims to promote and uphold association principles and doctrines. We hope and believe you read it carefully and approve its course. It is full of the get-together spirit, and ready at all times to work for your best interests. Several of our members have subscribed for their clerks, and say it pays. We accept such subscriptions on the membership club basis of 50 cents each.

#### Parcel Post.

Never before, to my knowledge, has any department official so boldly and persistently used the Government machinery to manufacture favorable sentiment and force legislation as has Mr. Meyer, our present Postmaster-General, in his efforts to secure a domestic parcel post. Bill after bill has been introduced; the newspapers are full of one-sided argument evidently sent out by paid contributors who stand close to the head of the postal department. In order to quiet the protests of retail merchants they now claim that the mail order houses are opposed to a parcel post.

The latest efforts are being concentrated on the Meyer rural parcel post scheme, and the new bills are worded to overcome the claim that catalogue houses could collect in one shipment a large number of packages and forward same to some agent who could send them out by rural post at the low rate. It is now proposed to limit the rural parcel post strictly to the merchants and people in a town where a route starts and the farmers living on said route. I think Mr. Meyer estimates that if each carrier handles three rural parcel post packages a day that the income will wipe out the present postal deficit.

If this is true who will pay the \$7,000,000 postage on

these packages. Naturally the man who orders the goods ought to do it, but bear in mind that postage must be paid by the sender, and you who deal with farmers realize how difficult it would be to charge and collect such an item. I venture it would not be a year before nearly every dealer would find it necessary to advertise free delivery of all rural orders, and thus the entire postal deficit would be saddled upon the already overburdened retail merchant. If this bill contained a provision that the party ordering goods by rural post should pay the postage on same, I think the demand for it would suddenly cease.

This is not all—official reports show that the post-office box renters paid last year \$3,556,801. When it is considered that the farmer and the large city residents have free house to house delivery, that this amount is over \$800,000 more than the entire receipts from third and fourth class matter, it looks like the small town dealers and their friends are being treated as E. Z. marks by the postal department. Now comes a new notice that April 1, 1908, box rent will be again advanced about 33 1-3 per cent. You that have been paying \$1.80 must pay \$2.40. We wonder if this is to pay us back for daring to raise our voice in protest against a parcel post? The real fight is still to come. It may not be this term of Congress, but there is too much financial advantage in a domestic parcel post for the mail order men and their allies to cease their efforts.

#### Question Box.

Under the direction of Secretary Corey, the time devoted to the Question Box proved to be one of the most enthusiastic periods of the meeting. Among those presented were the following:

1. *How many favor the practice of making net prices rather than quoting by list and discount?*

Out of the entire assembly only two expressed themselves as favoring net prices, an overwhelming majority being in favor of discounts. It was claimed by several speakers that the use of net prices involved too much detail, which made it difficult to keep track of costs.

2. *Would it not be better to have catalogues uniform in size?*

Upon the desirability of uniformity in this respect there was no disagreement, but it seems to be impossible of accomplishment, because of the wide diversity of ideas that prevail among manufacturers regarding this matter. One member suggested that the best alternative was found in a systematic arrangement for filing catalogues, and said that one of the best investments he ever made was for a file in which he has arranged upwards of 2000 different catalogues, any one of which can be referred to instantly.

3. *Is it better to hire experienced help or take inexperienced young men and develop them?*

This question aroused lively discussion, which brought out opinions on both sides, backed by experience. A few believed that it paid best to let the other fellow do the training and then hire a finished product. The majority, however, held that in the long run the contrary policy would yield the best results. As one member expressed it, "It is always better to have new men growing up in your business and becoming conversant with your methods of doing business, so that the gaps in your working force may be filled from the inside rather than the outside."

4. *How can we prevent show windows from frosting in winter?*

This brought out a good many suggestions of expedients that are familiar to the trade such as the use of electric fans, coating glass with glycerine and various devices for creating a circulation of air to absorb the moisture. One member told of a method employed for this purpose, which consisted of enclosing a space in the basement directly under the window and boring holes through the floor, thus establishing a constant circulation of air in an inexpensive way.

#### Resolutions.

Among the resolutions adopted were the following:

*Resolved*, That we urge the members of the House and Senate to use every honorable means for the enactment of a law to reduce the postage on first-class mail matter to 1 cent per ounce or fraction thereof; and that we recommend the revision of regulations covering second-class mail matter so that said class may be made to pay the cost of its carriage instead of being carried at the expense of the profit derived from first-class mail matter.

*Resolved*, That the secretary be instructed to take such action as he deems best in his judgment to defeat any bill or measure relating to parcel post.

*Whereas*, The Sherman Anti-Trust law in its present form is too drastic and too radical in that it may be interpreted to apply to any form of agreement, and is in its effect mischievous, vicious and wholly unfair and inequitable when applied to many of the commonest forms of agreement; be it



*Resolved*, That we petition our several State representatives in the national Congress to so revise and modify the terms of the law that it may recognize the difference between reasonable and unreasonable, between fair and unfair agreements; that it may not, when put in effect, work mischief upon legitimate and honest business interests.

*Resolved*, That we are in favor of the passage of a law prohibiting misleading advertisements of our respective lines of goods, believing that justice is the foundation of prosperity.

#### Other Addresses.

Addresses were delivered by Charles W. Burrows, Cleveland, Ohio, on "Parcel Post," in which the legislation proposed for its extension was carefully reviewed, and the harmful effects that might be reasonably expected from it pointed out; and by Geo. H. Maxwell, Chicago, Ill., who, under the topic of "Solidarity of the Community," explained how the development of country towns and communities is a matter of equal interest to both farmers and merchants. He held that the village life and the citizenship developed by it constitute the only hope of perpetuity for the free institutions of this country, and that the most grave and serious dangers now menacing its future result from the overgrowth of our great cities and the subsequent degeneration of the average citizen of the nation.

A very interesting and instructive talk was also given by Thos. McMillen on the "A. B. C. of Advertising," the three essential principles of which he declared to be "personality, service and goods."

#### Convention Committees.

The Convention committees appointed by the president were composed as follows:

**RESOLUTIONS:** O. L. Torbet, W. A. Shipley, Elmer Nichols.  
**AUDITING:** Will Weir, J. Rimstedt.  
**NOMINATING:** E. P. Schenk, Wm. B. Harrah, E. L. Wagner, A. F. Brown, Rufus Dooley, O. O. Carpenter, D. N. Hury, Harry Magee, W. H. Hubbard, Leonard Laird, Milo J. Thomas, Geo. P. Ross, A. Reichenbach.

#### Officers for 1908.

Upon presentation of the Nominating Committee's report the candidates named therein for officers and delegates to the national convention to serve during the ensuing year were unanimously elected, as follows:

**PRESIDENT,** W. B. Creed, New Albany.  
**FIRST VICE-PRESIDENT,** Fred Bartholomew, Michigan City.  
**SECOND VICE-PRESIDENT,** M. W. Coate, Kokomo.  
**SECRETARY,** M. L. Corey, Argos.  
**TREASURER,** Charles E. Hall, Indianapolis.  
**EXECUTIVE COMMITTEE:** W. B. Creed, New Albany; Fred Bartholomew, Michigan City; M. W. Coate, Kokomo; Harvey Trueblood, Herman Bohls, La Fayette.

**DELEGATES TO NATIONAL ASSOCIATION** were chosen as follows: Cullum Ott, Rockville; H. R. Culbertson, Auburn; Wm. Hunter, Versailles; H. G. May, Shirley; I. J. Gardner, Scottsburg; M. L. Lewis, Marion; A. Reichenbach, Huntington.

#### Convention Notes.

S. R. Miles, president of the National Association, was prevented from filling his place on the programme by the heavy snowstorm which delayed his train for several hours. Arriving late Wednesday evening he was compelled to continue his journey without stopping in order to reach Buffalo in time for his engagement at the New York convention.

The Wisconsin and Illinois associations were represented by Secretary C. A. Peck of the former, and President T. J. Mathews and Secretary L. N. Nish of the latter, all of whom favored the assembly with brief, but entertaining talks.

Music was furnished at the exhibition hall by an orchestra, and no detail that could contribute to the pleasure of members and guests of the convention was overlooked by the Entertainment Committee, to whose painstaking care and systematic plans are due the success of these features.

A complimentary dinner given on Thursday evening at the Denison Hotel, by President-elect W. B. Creed to the retiring president and brother officers, was a most enjoyable affair, and was made the occasion of launching the new administration upon its course with cordial wishes for the success it will surely win.

As guests of the association over 750 persons attended a theater party given on Wednesday evening at

the Park Theater. Hoes, Rakes, Shovels, Lawn Mowers and other Hardware articles, with which the sides of the stage was decorated, gave a realistic touch to the rural character of the play and were at the same time indicative of the trade interests of the appreciative audience which comfortably filled the house.

#### Exhibits and Exhibitors.

Following is a list of the exhibiting manufacturers at the Indiana convention, with their representatives:

**ACME WASHING MACHINE COMPANY**, Columbus, Ohio: Acme Washing Machines. Represented by F. E. Jack and C. L. Brandon.  
**ADRIAN WIRE FENCE COMPANY**, Adrian, Mich.: Wire Fence. Represented by E. S. Ferguson, G. W. McPike and Don H. C. Bowen.  
**AJAX CONDUCTOR & MFG. COMPANY**, Chicago, Ill.: Lightning Conductors. Represented by W. F. Lennen, L. E. Samuels and W. H. McCullough.  
**ALLIETH MFG. COMPANY**, Chicago, Ill.: Door Hangers and Hardware Specialties. Represented by Irving A. Sibley, Jr., and Willis D. Jameson.  
**AMERICAN STEEL & WIRE COMPANY**, Chicago: Woven Wire Fence. Represented by Ira L. Sawin, John M. Thomas, John J. Moylan, Jas. A. Boyd and John W. Meaker, Jr.  
**E. C. ATKINS & CO., Inc.**, Indianapolis, Ind.: Saws. Represented by Frank Wells and G. W. Dunnington.  
**BANY & HADLEY MFG. COMPANY**, Delphos, Ohio: Washing Machines. Represented by B. F. Hadley.  
**K. G. BARTLEY**, Chicago, manufacturers' agent: Cutlery, Builders' Hardware, Cement Tools, &c.  
**J. A. & W. BIRD & CO.**, Chicago, Ill.: "Rex Fintkote" Roofings. Represented by E. E. Davis.  
**BRUCE-SHERWOOD AGENCY**, Indianapolis, Ind.: Manufacturers' agents.  
**A. BURDSAL COMPANY**, Indianapolis, Ind. Represented by Granville G. Allen, W. W. Stemm, T. H. Carter, Harry Reed, Marshall Moore and R. D. Sanders.  
**CANADIAN CORDAGE & MFG. COMPANY, LTD.**, Peterborough, Ontario, Can.: Binder Twine. Represented by Geo. N. Foresman.  
**CARBORUNDUM COMPANY**, Niagara Falls, N. Y.: Abrasive Wheels, Sharpening Stones, Carborundum Paper and Cloth. Represented by Geo. N. Allen, Geo. E. Dresser and F. E. Gridley.  
**CATTARAUGUS CUTLERY COMPANY**, Little Valley, N. Y.: Cutlery. Represented by W. B. TenBrook.  
**CHADBORN & COLDWELL MFG. COMPANY**, Newburgh, N. Y.: Horse and Hand Lawn Mowers. Represented by H. H. Wallis.  
**COLDWELL LAWN MOWER COMPANY**, Chicago, Ill.: Lawn Mowers. Represented by J. T. Bullen and E. B. Standert.  
**COLE CARRIAGE COMPANY**, Indianapolis, Ind.: Vehicles. Represented by S. S. Helms.  
**COFFEYVILLE IMPLEMENT & MFG. COMPANY**, Coffeyville, Kan.  
**COLUMBIA HARNESS COMPANY**, Indianapolis, Ind.: Harness, Whips and Dusters. Represented by M. Martin.  
**COLUMBIAN HARDWARE COMPANY**, Cleveland, Ohio: "Tubo" Registers, Door Hinges, &c. Represented by F. W. Wood and J. E. Stenger.  
**COMPRESSED AIR WONDER WASHER COMPANY**, Shelbyville, Ind.: Washing Machines. Represented by F. D. Churchill.  
**CONWAY STEEL RANGE COMPANY**, Bellevue, Ohio: Steel Ranges and Cook Stoves. Represented by J. D. Conway and L. E. Smith.  
**COULTER-BEEGLE COMPANY**, Chicago, Ill.  
**CRAWFORDSVILLE TANK COMPANY**, Crawfordsville, Ind.: Troughs and Tanks. Represented by J. Q. Clarke.  
**DAIRY CREAM SEPARATOR COMPANY**, Lebanon, Ind.: Cream Separators. Represented by Richard D. Voorhees.  
**DE LAVAL SEPARATOR COMPANY**, Chicago, Ill.: Cream Separators. Represented by T. E. McClean, Jas. H. Hilsaker and Elihu Scott.  
**DES MOINES INCUBATOR COMPANY**, Des Moines, Iowa: Incubators and Brooders. Represented by A. P. Glenn and J. M. Harris.  
**FERDINAND DIECKMANN COMPANY**, Cincinnati, Ohio: Conductor Elbows. Represented by Otto Dieckmann.  
**DODD & STRUTHERS**, Des Moines, Iowa: Copper Cable Lightning Rods. Represented by Charles Dausman and Geo. Wessels.  
**DOVER MFG. COMPANY**, Canal Dover, Ohio: Asbestos Sad Irons. Represented by Charles T. Johnson, J. W. Muckley and A. S. Riley.  
**DUPLEX SASH LOCK COMPANY**, Shelbyville, Ind. Represented by Wm. Lipps.  
**DURANT-DORT CARRIAGE COMPANY**, Flint, Mich., and Indianapolis, Ind.: Vehicles. Represented by A. E. Hazel, J. D. Marshall and J. C. Moore.  
**ELWOOD LAWN MOWER MFG. COMPANY**, Elwood, Ind.: "Hoosier" Ball Bearing Mowers. Represented by E. C. Heck.  
**EMPIRE CREAM SEPARATOR COMPANY**, Bloomfield, N. J., and Chicago, Ill.: Cream Separators. Represented by W. P. Sheperd and C. P. Roubeshush.  
**EXER-KETCH NOVELTY COMPANY**, Indianapolis, Ind.  
**FRANK J. ENGER**, Cincinnati, Ohio: Buggies. Represented by John W. Corya.  
**ENGINEERING & SUPPLY COMPANY**, Milwaukee, Wis.: "Brett" Grain Saver. Represented by C. H. Barker, E. B. Arnold and J. H. Sprecher.  
**FEHRING CARRIAGE COMPANY**, Columbus, Ind.: Vehicles. Represented by Lynn Fehring.  
**FOREST CITY PAINT & VARNISH COMPANY**, Cleveland, Ohio: Paints and Varnishes.  
**FRAZER STOVE COMPANY**, Indianapolis, Ind.: Stoves.  
**JOSEPH GARDNER**, Indianapolis, Ind.: Gasoline Soldering Furnace.  
**GIBSON AUTOMOBILE COMPANY**, Indianapolis, Ind.: Automobile Repairs. Represented by B. W. Twyman.  
**GLASCOCK BROS. MFG. COMPANY**, Muncie, Ind.: Baby Jumpers and Go Carts. Represented by C. L. Bender.  
**GLOBE STOVE & RANGE COMPANY**, Kokomo, Ind.: Stoves and Ranges. Represented by S. B. Purvis, J. C. Patton, Frank Hughes, Charles Horsman and Thos. Flanagan.  
**HANNA PAINT MFG. COMPANY**, Columbus, Ohio: Floor Paints. Represented by Lilly & Stalnaker.  
**HARPER BUGGY COMPANY**, Columbia City, Ind.: Buggies. Represented by Jas. B. Kaler.  
**HAWKEYE INCUBATOR COMPANY**, Newton, Iowa: "One Minute" Washing Machines. Represented by Bem V. Walter.  
**H. T. HEARSEY VEHICLE COMPANY**, Indianapolis, Ind.: Vehicles. Represented by F. I. Willis, W. B. Dean and E. A. Grover.  
**HOKE MFG. COMPANY**, Frankfort, Ind.: Leverless Riding Cultivators. Represented by J. A. Cutler, F. S. Coulter, J. S. Hoke and A. B. Swartz.  
**HOLLIDAY & WYON COMPANY**, Indianapolis, Ind.  
**IDEAL CONCRETE MACHINERY COMPANY**, South Bend, Ind.: Concrete Machines.

ILLINOIS IMPLEMENT COMPANY, Peoria, Ill.: "Auto" Tongue Trucks. Represented by E. M. Haines.  
 INDEPENDENT WHIP COMPANY, Westfield, Mass.: "Corabone" Whips. Represented by Frank Swaim.  
 INDIANA HARNESS COMPANY, Columbus, Ind.: Harness. Represented by L. J. Welser.  
 INDIANAPOLIS CORRUGATING COMPANY, Indianapolis, Ind. Represented by F. M. Bowers and J. Q. A. McClurg.  
 INDIANAPOLIS PAINT & COLOR COMPANY, Indianapolis, Ind.: Paints. Represented by S. L. Bassett, Jos. Catherwood, C. L. Davis, J. M. Reinacker and Geo. C. Stacey.  
 INDIANAPOLIS SADDLERY COMPANY, Indianapolis, Ind.: Harness, Horse Collars and Strap Work. Represented by R. H. Montgomery and Robert Spillman.  
 INTERNATIONAL HARVESTER COMPANY, Chicago: Wagons, Cream Separators, Twine, &c. Represented by D. R. Sheldon, T. B. Lacey, G. A. Johnson, A. C. Atherton and F. W. Haskell.  
 JAMESVILLE MACHINE COMPANY, Indianapolis, Ind. Represented by R. C. Craig.  
 JEWEL CARRIAGE COMPANY, Carthage, Ohio: Carriages and Wagons. Represented by Watt Meridith and W. C. Ewing.  
 JOHNSON-WOODBRIDGE COMPANY, Indianapolis, Ind.: Glass, Paints, Oils and Brushes. Represented by Sam C. Thalls.  
 JOHNSTON HARVESTER COMPANY, Batavia, N. Y.: Farm Implements. Represented by W. D. Long, D. B. Ford and E. L. Moor.  
 JONES SELF MEASURING PUMP COMPANY, Marion, Ind.: Pumps. Represented by I. L. Ayres.  
 KOKOMO STEEL & WIRE COMPANY, Kokomo, Ind.: Wire Fence. Represented by R. J. Barber and S. W. Jarvis.  
 E. M. KRAMER COMPANY, Paxton, Ill.: Implements. Represented by E. D. M. Haines.  
 LAMB WIRE FENCE COMPANY, Adrian, Mich.: Woven Wire Fence. Represented by S. H. Swift.  
 LANDERS, FRARY & CLARK, New Britain, Conn.: Bread Maker and Coffee Percolator. Represented by L. L. Redick and W. E. Eastman.  
 LASHER MFG. COMPANY, Davenport, Iowa: Kitchen Utensils. Represented by E. C. Greeley.  
 LAWRENCE BROTHERS, Sterling, Ill.: Barn Door Hangers, Hinges and Butts. Represented by W. J. Gilbert.  
 LAYMAN-CAREY COMPANY, Indianapolis, Ind.: Jobber of Hardware. Represented by J. T. Layman, T. D. Layman, C. A. Pearson, C. P. Aten, A. A. Gottomiller, Wm. Bailey, Geo. Schaub and D. B. Bollinger.  
 LENNOX FURNACE COMPANY, Marshalltown, Iowa: "Torrid Zone" Furnaces. Represented by S. P. Britt and W. J. Heald.  
 LOWE BROTHERS COMPANY, Dayton, Ohio; New York and Chicago: Paints and Varnishes. Represented by Edward S. Blanchard and W. O. Zehring.  
 MARTIN-SENOUR COMPANY, Chicago, Ill.: Paints and Varnishes. Represented by O. H. A. Gocke and Frank Sommers.  
 MARTINSVILLE BUGGY COMPANY, Martinsville, Ind.: Buggies. Represented by P. C. Morgan.  
 MAY & FIEBEGGER, Akron, Ohio.  
 J. S. McDANIEL, Lebanon, Ind.: "Mack's" Wonder Washer. Represented by J. S. McDaniel.  
 MCFARLAN CARRIAGE COMPANY, Connersville, Ind.: Vehicles. Represented by W. F. Orcutt.  
 F. MEYER & BRO. COMPANY, Peoria, Ill.: "Handy" Furnace Pipe and Fittings. Represented by Charles Uhlig.  
 MICHIGAN WIRE FENCE COMPANY, Adrian, Mich.: Fencing. Represented by R. T. Peebles.  
 MIDDLETOWN FURNITURE COMPANY, Middletown, Ind.: Washing Machines. Represented by J. T. Burk.  
 MIER CARRIAGE & BUGGY COMPANY, Ligonier, Ind.: Vehicles. Represented by J. W. Rodgers and I. M. Baum.  
 MILLER HARNESS COMPANY, Champaign, Ill. Represented by R. G. Richardson.  
 MUNSON LIGHTNING CONDUCTOR COMPANY, Indianapolis, Ind.: Copper Tubular Lightning Conductors. Represented by A. J. Munson and C. F. McVey.  
 NAPPANEE IRON WORKS, Nappanee, Ind.: Punches and Shears. Represented by J. W. Rosbrough.  
 NATIONAL CABLE & MFG. COMPANY, Niles, Mich. Represented by M. G. Mitchell, J. M. York and J. T. Morgan.  
 NATIONAL STOVE COMPANY, Div., American Stove Company, Lorain, Ohio: Gas Ranges. Represented by J. A. Alexander and T. J. Moran.  
 NEVER-BREAK RANGE COMPANY, St. Louis, Mo.: Ranges. Represented by G. F. Jackson and J. B. Owens.  
 NEY MFG. COMPANY, Canton, Ohio: Haying Tools. Represented by A. M. True and I. N. Kinney.  
 NORTHERN OHIO BLANKET MILLS, Cleveland, Ohio: Horse Blankets and Carriage Robes. Represented by C. D. Remington.  
 OHIO BASKET COMPANY, West Liberty, Ohio: Corn and Feed Baskets. Represented by S. C. Black.  
 OHIO VARNISH COMPANY, Cleveland, Ohio: Varnishes. Represented by J. E. Tyler.  
 OLIVER MACHINERY COMPANY, Grand Rapids, Mich.: "Oliver" Bench Clamps.  
 OMAHA LIGHTNING ROD & ELECTRIC COMPANY, Omaha, Neb.: Lightning Rods. Represented by T. B. Adams and Daisy B. Adams.  
 ONEIDA COMMUNITY, LTD., Oneida, N. Y.: Silverware, Traps, Iron Chains, &c. Represented by Frank H. Primo and Alfred Clark.  
 PARRY MFG. COMPANY, Indianapolis, Ind.: Buggies. Represented by Mr. Gough, Mr. Webb and Mr. McFarland.  
 PARSONS HAWKEYE MFG. COMPANY, Newton, Iowa: Washers. Represented by Parsons Band Cutter & Self Feeder Company, Indianapolis, Ind.  
 PEOPLE'S DIRECT SUPPLY COMPANY, Du Bois, Pa.: Porch Swings. Represented by Dole Hamilton.  
 PEORIA DRILL & SEEDER COMPANY, Peoria, Ill.: Seeding Machinery. Represented by J. M. Newton.  
 PETALUMA INCUBATOR COMPANY, Petaluma, Cal., and Indianapolis, Ind.: Incubators and Brooders. Represented by A. M. Williams and R. A. Pierson.  
 PITTSBURGH PLATE GLASS COMPANY, Cincinnati Branch: Patton's Sun-Proof Paints. Represented by E. C. Dann, W. J. Dermody and E. W. Keisker.  
 PITTSBURGH STEEL COMPANY, Pittsburgh, Pa.: Wire Fences. Represented by E. S. Jordan, C. D. James and G. W. Fisher.  
 RACINE-SATTLEY COMPANY, Racine, Wis.: Agricultural Implements. Represented by Indianapolis branch.  
 ROBESON CUTLERY COMPANY, Rochester, N. Y.: Cutlery.  
 ROCHESTER STAMPING COMPANY, Rochester, N. Y.  
 ROSS CARRIAGE MFG. COMPANY, Union City, Ind. Represented by W. H. Winsted.  
 ROYAL SPRING COMPANY, Clinton, Iowa: "Royal Spring" Fly Killer. Represented by Carroll E. Armstrong.  
 ST. LOUIS CORDAGE COMPANY, St. Louis, Mo.: Rope and Binder Twine. Represented by Will Cumback.  
 SARGENT PAINT & COLOR COMPANY, Indianapolis, Ind.: Paints. Represented by Harry Alsop and W. F. O'Brien.  
 D. M. SECHLER CARRIAGE COMPANY, Moline, Ill.: Vehicles.

SECURITY LIGHTNING ROD COMPANY, Burlington, Wis.: Lightning Rods. Represented by C. F. Beardsley and L. G. Rickard.  
 SEIDEL BUGGY COMPANY, Richmond, Ind.: Buggies and Wagons. Represented by Geo. E. Seidel and Arthur C. Hill.  
 SHARPLES SEPARATOR COMPANY, Chicago, Ill.: Cream Separators. Represented by W. E. Strowhaver and J. D. Woodruff.  
 SHELBYVILLE FILLER & COLOR COMPANY, Shelbyville, Ind.: Fillers, Stains and Colors. Represented by Harry De Prez, George Otto and John Reinbust.  
 SHELBY SPRING HINGE COMPANY, Shelby, Ohio: Hinges. Represented by L. D. Malone and R. E. Murray.  
 SMITH MFG. COMPANY, Chicago, Ill.: Cream Separators and Gasoline Engines. Represented by D. H. Smith and J. D. Hobson.  
 SOUTHERN SEED COMPANY, Indianapolis, Ind.: Seeds. Represented by J. H. Spencer and O. J. Gudghe.  
 SPRING STEEL FENCE & WIRE COMPANY, Anderson, Ind.: Woven Wire Fence. Represented by W. F. Ashby, M. Reed and G. J. Derthed.  
 STANDARD METAL COMPANY, Indianapolis, Ind.: Tin Plate, Sheet Iron and Metals. Represented by W. M. Husbands and Joseph F. Jewar.  
 STANDARD LIGHTING COMPANY, Cleveland, Ohio: Gas Ranges. Represented by T. J. Moran and J. A. Alexander.  
 STAYER CARRIAGE COMPANY, Chicago, Ill.: Farm Wagons. Represented by W. W. Yager.  
 SUPERIOR DRILL COMPANY, Springfield, Ohio: "Superior" Disk Drills. Represented by W. Allison Scott, A. B. Barnard and O. F. Clevenger.  
 TANNER & CO., Indianapolis, Ind.: Tin Plate, Sheet Iron and Metals. Represented by J. C. Henley, N. P. Appar and Geo. Sommer.  
 R. N. THOMAS, Shenandoah, Iowa: Corn Huskers. Represented by J. N. Skaggs.  
 VAN CAMP HARDWARE & IRON COMPANY, Indianapolis, Ind. Represented by M. H. Lewis, W. R. Walden and Charles Catlin.  
 VEHICLE APRON & HOOD COMPANY, Columbus, Ohio: Horse Covers. Represented by Wm. Bradford.  
 VERMONT FARM MACHINE COMPANY, Bellows Falls, Vt.: "United States" Cream Separators and Dairy Specialties. Represented by J. A. Hurley.  
 WAHLE FOUNDRY & MACHINE WORKS, Davenport, Iowa: "Snowball" Washing Machines. Represented by Herman H. Wahle.  
 WHITE LILY WASHER COMPANY, Davenport, Iowa, and Toledo, Ohio: Washing Machines. Represented by A. F. Victor and A. Ruhling.  
 WHITESIDE WHEEL COMPANY, Indianapolis, Ind.: "Ste-el-astic" Wheels. Represented by H. C. Churchman and J. F. Lugenbell.  
 WINTER & HILL, Indianapolis, Ind.: Implements. Manufacturers' agents.

### Price-Lists, Circulars, Etc.

*Manufacturers in hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price list in this column.*

ROCKWELL MFG. COMPANY, Malvern, Ark.: Illustrated catalogue of high quality Screen Goods, including Screen Doors, adjustable Window Screens, knocked down Frames and made to order work.

BUCHER & GIBBS PLOW COMPANY, Canton, Ohio: Illustrated catalogue, No. 108, of Plows, Harrows, Land Rollers, Cultivators, &c.

CHAMPION SAFETY LOCK COMPANY, Geneva, Ohio: Large and artistic catalogue covering a handsome line of Builders' Hardware, including Push Plates, Chest Handles, Spring Hinges, Door Pulls, Sash Locks and Lifts, Drawer Pulls, Mortise Door Bolts, Cupboard Turns and Catches, &c.

NEW YORK HOUSE FURNISHING GOODS COMPANY, 93 Reade street, New York: Illustrated circulars referring to Dangler Gas Cookers, Diamond Nozzles, Wilson Bread Toasters, &c.

SPILLETT & SPRINGER, 106 Chambers street, New York: Circular illustrating Plush and Morocco Cases, Sample Rolls, &c.

ROCK ISLAND TOOL COMPANY, Rock Island, Ill.: Pamphlet catalogue D, 37 pages, devoted to a line of Automatic Swivel Type Vises of various patterns in connection with Portable Iron Tool and Vise Stands. The illustrations include views of the Tools complete, and in addition show the disassembled parts, each of which is numbered for convenience in ordering repairs.

IDEAL MFG. COMPANY, Detroit, Mich.: Pamphlet catalogue No. 13, illustrating an extensive line of Gas Stoves and Ranges. Particular attention is directed to the Ideal Patent Centrifugal Burner and the Ideal Safety Oven Lighter. The Ideal Independent Gas Water Heater is also shown, together with a few plumbing specialties.

GOODELL-PRAATT COMPANY, Greenfield, Mass.: Supplement to No. 8 catalogue, illustrating the complete Massachusetts Tool Company line, for which it will hereafter



act as exclusive sales agent; in fact, it is the Precision Tool department of the Goodell-Pratt Company. The line includes Calipers, Micrometers, Steel Rules and Straight Edges, Gauges, Protractors, Dividers, &c.

**DE KALB FENCE COMPANY, De Kalb, Ill.:** A series of post cards containing artistic photographs of farm scenes, including views of Fences made of De Kalb Field, Hog and Poultry Wire.

**FLEXIBLE STEEL LACING COMPANY, Chicago:** Illustrated price-list with cards, testimonials, &c., referring to Flexible Steel Belt Lacing.

**ROCK ISLAND TOOL COMPANY, Rock Island, Ill.:** Illustrated Catalogue D referring to Vises, Repair Parts, &c.

**C. J. ROOT COMPANY, Bristol, Conn.:** Illustrated catalogue for 1908 referring to Counting Machines for various purposes.

**WHITMAN & BARNES MFG. COMPANY, Chicago:** Catalogue No. 66, a handy pocket edition, referring to Diamond Twist Drills, Reamers, Wrenches, Cutters, &c.; also Catalogue No. 67 referring to Economy and Norka High Speed Drills and Chucks.

### A MODEL SHOW WINDOW IN A FACTORY.

**T**HE immense value of attractive window displays has been proved by the Wire Goods Company, Worcester, Mass., by means of a model window erected in one of the company's factory rooms and the application of re-

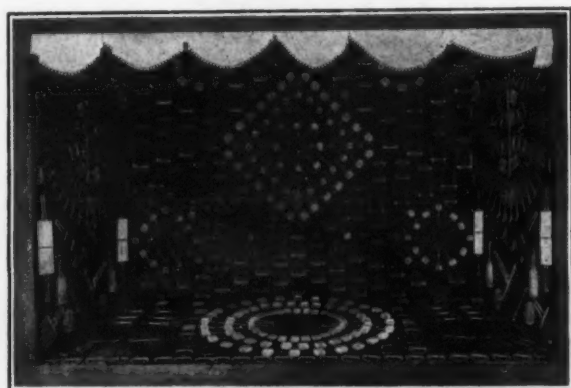


Fig. 1.—Interesting Conventional Design of Wire Goods.

sults of studies carried on therein to the windows and counters of customers. The model window is 15 ft. long, 8 ft. deep and 10 ft. high. It is framed in black, and the background is of the same somber shade, that contrasts may be well defined. It was originally built for the purpose of displaying the company's line of Wire Hardware

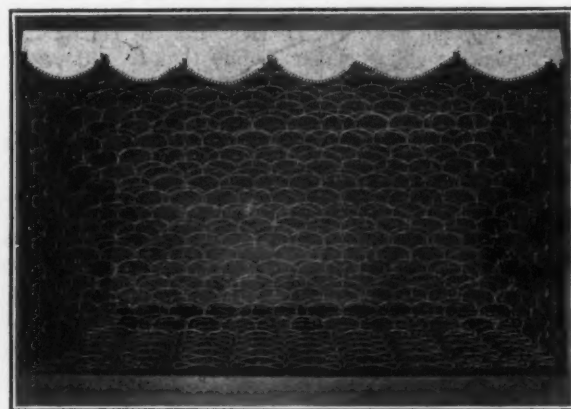


Fig. 2.—Entire Window Devoted to Garment Hangers.

and Kitchen Wire Goods to the company's salesmen at a convention of representatives to better their knowledge of means of increasing sales. An expert window dresser arranged some of the displays, and employees of the company arranged others. The idea has now been carried by the company into the windows and stores of its cus-

tomers. Sales by the manufacturer's customers, where the line has been featured in window and counter displays, have proved that an enormous impetus may be given in this manner, a fact that few enterprising merchants would doubt for a moment.

It will be noted that Wire Goods permit of interesting conventional design. Fig. 1 shows an instance of this. The central motif is the circular design of Soap Holders on the floor, flanked with a miscellaneous but symmetrical

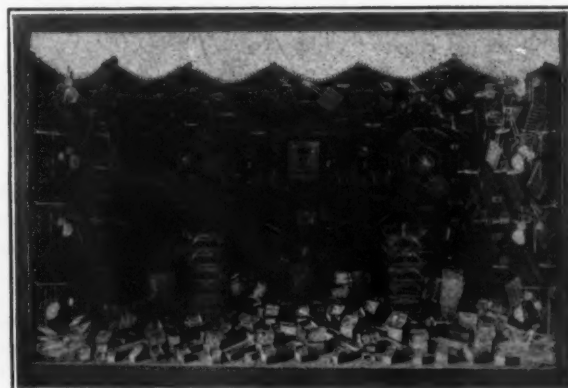


Fig. 3.—Harmonious Arrangement of a Large Variety of Wire Goods.

arrangement of Tea Pot Stands, Meat Rests, Kitchen Forks and Sad Iron Stands. The rear panel has as its central design a tilted square of Soap Holders, with an assortment of Soap Brackets as fillers. The designs of the side panels are alike, being composed of Kitchen Forks, Tea Pot Stands and Sad Iron Stands, with a line of Brollers beneath to fill in the space. Such a window on the street end of a store could not help but attract attention. Beneath is the truth: "Most people are inveterate, unconscious window gazers."

The same window arrangement, with a curtain of Garment Hangers next the glass was also made. From



Fig. 4.—How Counter Displays May Be Arranged.

the street the vision of the window gazer must pass the skeleton of Wire Hangers before they can take in the remainder of the display. The tinge of novelty must have its effect in attracting attention.

In Fig. 2 the entire window is devoted to Garment Hangers, arranged in a series of curtains, impressive in number. Yet the approximate value of the goods shown, reckoned in price to the merchant is but \$25, while the cost of the goods shown in Fig. 1 is \$30.

In Fig. 3 there is not the same attempt to produce dominating features in design in the way of large figures, but there is a harmonious arrangement of a great deal of goods. The art of displaying this class of goods in store interiors has been studied in the same room with the model window, one idea of such an arrangement being shown in Fig. 4.

In connection with the company's efforts in creating an interest in window display on the part of its customers a pamphlet entitled "Display Suggestions" has been issued, containing halftones showing different ideas of arrangement, together with a synopsis of the goods included in each design.

### Requests for Catalogues, Etc.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

**REQUESTS** for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM GEO. C. HANSON, Portland, Ore., who has succeeded Calster & Hanson in the Hardware, Stove, Paint and Sporting Goods business.

FROM PERKINS HARDWARE & ROOFING COMPANY, Youngstown, Ohio, which is planning to build a new store, 40 x 85 ft.

FROM JERRARD & COVINGTON, Bemidji, Minn., successors to Jerrard Plumbing Company, who will handle Shelf Hardware, Stoves, Paints and Sporting Goods in addition to doing plumbing and heating.

FROM ROCKLAND HARDWARE COMPANY, Rockland, Maine, whose store and stock of Hardware, Stoves, Paints and Sporting Goods was recently damaged by fire to the extent of about \$7000.

FROM SANDOZ & BARTA, Verdigris, Neb., who have succeeded to the Hardware, Stove, Implement, Paint and Vehicle business of Schmidt & Sandoz.

FROM NORTHERN HARDWARE COMPANY, Petoskey, Mich., which has been reorganized with a number of new stockholders, and will be managed by W. P. B. Wachtel.

FROM ALLEN-MOSS HARDWARE COMPANY, Henderson, N. C., which has been incorporated with an authorized capital of \$25,000 by S. H. Allen, G. B. Allen and W. E. Moss.

FROM CHARLES J. KIMBALL, JR., Green Bay, Wis., who has bought the business of A. Kimball Hardware Company, which recently effected a satisfactory settlement with its creditors.

FROM LEHMAN HARDWARE & IMPLEMENT COMPANY, Newton, Kan., which was recently burned out, with a loss on building of \$15,000 and on stock of \$35,000. Both were about two-thirds covered by insurance. A new store building and large warehouse are now under way, which will give the company one of the finest Hardware and Implement establishments in its section.

FROM NEFF HARDWARE COMPANY, Wheeling, W. Va., handling General and Builders' Hardware at wholesale and retail. E. W. S. Neff, for 11 years traveling salesman with the Ott-Heiskel Hardware Company, Wheeling, has recently started this business.

FROM A. T. STEWART HARDWARE COMPANY, 105 East Lake street, Chicago, Ill., handling Shelf Hardware, Sporting and Athletic Goods, &c., at wholesale.

FROM E. H. SCOTT, who has recently purchased the general Hardware and Farm Implement business of J. H. Wagner in Ischua, N. Y.

FROM W. O. HARDWARE COMPANY, San Francisco, Cal., which has moved into its own new store on Sixteenth, Market and Noe streets. The company will be pleased to

receive catalogues relating to Stoves, Household Goods, general Hardware, Paints, Oils, Glass, &c. The new building is the largest Hardware store in that part of the city, and a \$10,000 stock will be carried.

### Misco Anti-Friction Metal.

The Milwaukee Tack Company, Milwaukee, Wis., has arranged to handle the entire output of the Milwaukee

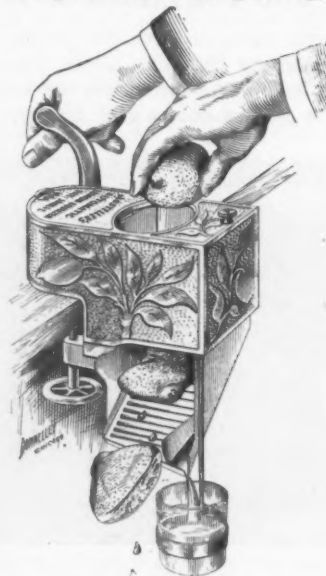


Smelting Company, whose metals are put out under the brand Misco Anti-Friction Metal, as illustrated herewith. Besides its regular brands, the company is prepared to furnish any special brand of

babbitt or bearing metal that may be desired for use or sale.

### Mosteller Automatic Lemon Squeezer.

The Mosteller Mfg. Company, 5 West Madison street, Chicago, is offering the automatic lemon squeezer here illustrated. It consists of knife, squeezer and strainer all combined, every part being accessible and easily detached or adjusted. There are no bearings in contact with the acid, no wood which might sour and no springs. The machine is represented as being strong, durable, san-

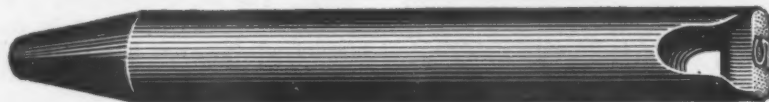


The Mosteller Automatic Lemon Squeezer.

itary and ornamental. Pressure blocks are adjusted with rubber cushions, so as to be adapted to large or small fruit, getting the juice with one movement of the lever without any of the bitter parts of the peel. This, together with pulp and seeds, is ejected without handling, and the juice is strained into the proper receptacle. It is only necessary to drop a whole or half lemon, lime or orange into the box, pull the lever and the machine does the squeezing. The maker claims that it will effect a large saving in lemon bills.

### The Buchanan Foundry Company's Sash Weights.

The Buchanan Foundry Company, Lebanon, Pa., is offering the new style sash weight shown herewith. The diameter of the weights is uniform throughout and the ends taper so the weights pass each other in the box. The weight of each casting is plainly marked on the end of each by raised Arabic figures. This is done by means of a dry sand core and is a feature that will be



The Buchanan Foundry Company's Sash Weights.

protected by patent. The weights are referred to as being round and true, with no lumps or fins, and when piled in bins, with the eye end out, the sizes desired are easily selected.



### Hydro-Pneumatic Low Down Pumps.

In Figs. 1 and 2 are shown two of the types of hydro-pneumatic low down pumps put on the market by F. E. Myers & Bro., Ashland, Ohio. The pumps are precisely alike, except in the application of power, Fig. 1 showing the usual construction and Fig. 2 illustrating the patent

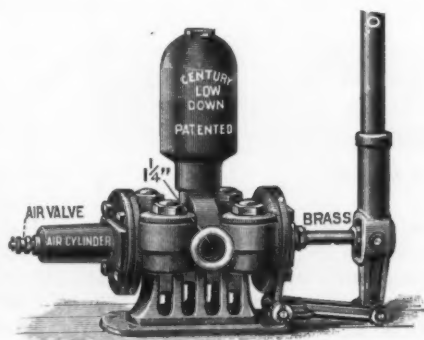


Fig. 1.—Myers Hydro-Pneumatic Century Low Down Pump, No. 286A.

ratchet head applied to the horizontal pump. The pump shown in Fig. 2 is also furnished without the air valve. It has been demonstrated, it is explained, that the ratchet movement under the same pressure will operate with from 25 to 40 per cent. less power, or a 3-in. pump with ratchet movement can be operated just as easily as a 2½-in. cylinder pump with the lever movement. The pumps are equipped with brass valve seats, rubber faced valves and brass covered piston rod, and are especially designed to operate in connection with the hydro-pneumatic cylinder for pumping air. The pumps are made with liberal flanges, strongly built in all parts for heavy usage and tested under pressure before leaving the fac-

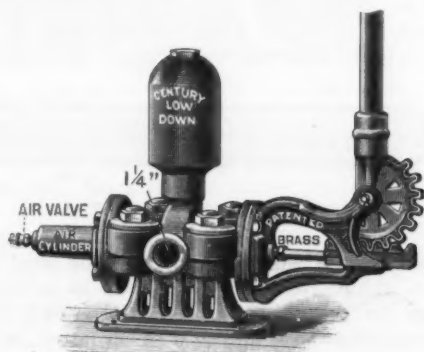


Fig. 2.—Myers Hydro-Pneumatic Cog Gear Century Low Down Pump, No. R286A.

tory. The brass lining, which is removable, extends out flush with the head of the cylinder and is concave at the ends, so that the plunger can be readily removed and easily replaced, without the difficulty in getting same to register. The suction and discharge valves are all accessible by removing individual caps, which gives the operator free access to all the valves without disturbing either the suction or discharge pipe, or making it necessary to remove any of the parts except the cap referred to. The air cylinder, 1¼ in. in diameter, is brass lined and has an independent plunger and air valve, so that the pumping of air does not in any way affect the water capacity of the pump, or in other words, the air pump is distinctly an individual feature, having its own plunger and check valve. The air is forced into the body of the pump and conveyed through the discharge pipe into the pressure tank, and is so arranged that by turning the cap on the valve the operator can pump air as well as water, or by a reverse turn of the cap discontinue the air supply. These pumps are adapted to filling high pressure tanks as used in private water works systems for town

and farm residences, as shown in Fig. 3. The pressure tank is placed in the basement of the building, where the water will not freeze, and the weight will not cause any damage to the timbers of the house. The pump is piped to the cistern or spring. The discharge pipe is connected direct to the tank, using a check valve on the pipe between the pump and the tank to retain the pressure in the latter. The water being pumped directly into the tank compresses the air, which in turn serves as a reserve power to drive the water to any part of the house through

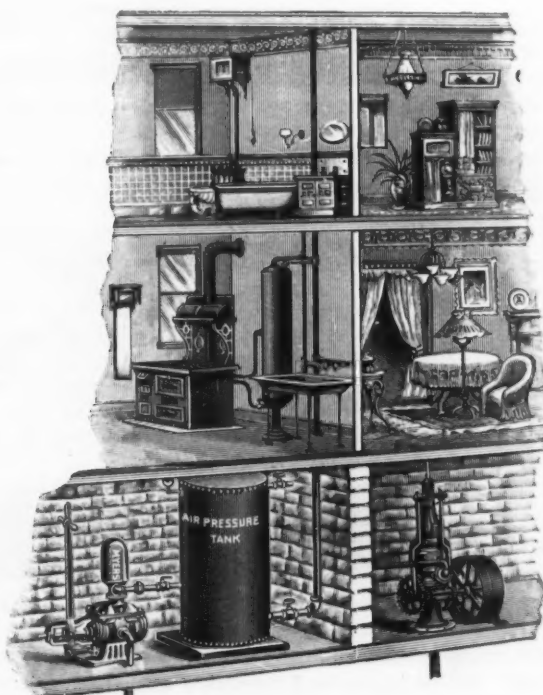
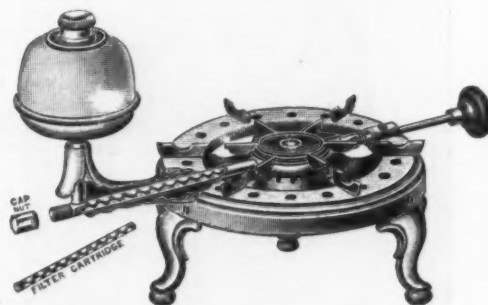


Fig. 3.—Water Works System in Private House.

the pipes placed for this purpose. The pump shown at the lower right hand corner of Fig. 3 is the firm's bulldozer working head, which is used in connection with its hydro-pneumatic cylinder for deep wells. The pump shown at the lower left hand corner is a hand horizontal pump for shallow wells or cisterns. The company also makes a power bulldozer pump of the horizontal type, which is used for shallow wells. The two pumps are intended to indicate the use for either shallow or deep wells.

### The Manning-Bowman Alcohol Gas Stove.

Manning, Bowman & Co., Meriden, Conn., have added to their line of stoves a denatured alcohol gas stove, of the



The Manning-Bowman Alcohol Gas Stove.

single burner type, which is shown in the accompanying illustration. The alcohol in the font feeds to the filter tube, in which is a cartridge of asbestos. The cartridge acts as a filter for the fuel, and also serves to regulate the flow of alcohol to the burner. In starting the lamp, free flow of fuel to the space around the burner is given by means of the valve handle, enough being admitted so that when ignited it heats up the burner, converting its

contents into alcohol gas, which is soon burning, and which continues to manufacture its gas without further assistance. The resultant heat, it is stated, is three times that of the regular chafing dish lamp, yet the burner may be regulated to a simmering flame. The flame has no odor nor smoke. The stove is made with both double and single burner, and is nicked. With its complete outfit, consisting of chafing dish, saucepan, coffee perco-

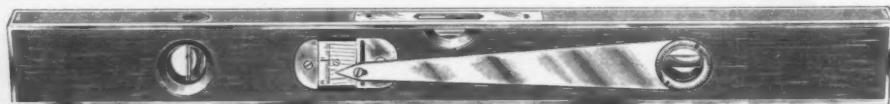


Fig. 1.—Carpenter's Radial Level No. 1F.

lator, cutlet dish, tea kettle, toaster and tea pot a complete dinner may be prepared on the dining table.

### Uncle Sam Washing Machine.

Under the trade name of Uncle Sam, the Uncle Sam Washer Company, Des Moines, Iowa, is manufacturing the hand lever washing machine here illustrated. The distinctive features claimed for the washer are its ease of operation and the simplicity of its mechanism. All of the working parts are mounted on or attached to the



Fig. 2.—The Dandy Level No. 40.

cover, thereby relieving the bottom of the tub from strain. Motion is obtained through a set of gears driven by a vertical lever attached to the side of the tub. The momentum of the drive is maintained by a flywheel mounted on the main shaft above the gears. A single pull or push of the lever is sufficient to produce several revolutions of the flywheel, and when full speed has been obtained but little power is required to keep it in



Uncle Sam Washing Machine.

motion. When it is desired to reduce the weight of the washer for convenience in moving, the flywheel can be easily removed. All bearings are easily accessible for oiling and can be reached without the necessity of tipping the tub. When the cover is raised the hinges are subjected to no strain because of the support furnished by the flywheel, which rests on a projecting shelf at the rear. The tub is corrugated on the inner sides, and is furnished with stake legs of Louisiana red cypress.

### New Stratton Levels.

The accompanying illustrations represent new levels added to the line manufactured by Stratton Level Company, successor to Stratton Brothers, Greenfield, Mass. The carpenters' radial level, shown in Fig. 1, is designed for defining grades, pitches, skew backs, batter work or projections and diamond work, where accurate measure-

ments are required. The level is simple and easily adjusted, either in degrees or in 16th parts of an inch to the foot departure from plumb or level. All parts are interchangeable and easily reached. The level is made in 26, 28, and 30 in. lengths. A lower priced level, No. 25, is made with the same attachment; also a level for masons' use, No. 9, with the same attachment, in 36 and 42 in. lengths. Fig. 2 represents a new line of Dandy levels, the one shown having adjustable level and plumb, brass end plates, mahogany finish, low cut side views and brass top plates. Cheaper grades of this level include Nos. 45, 50 and 55. The company has the exclusive

agency in America for Wood's patent Cat's Eye level vial, shown in Fig. 3. It is an imported glass, the air bubble appearing like a cat's eye when reading; the liquid being yellow and the glass green. The combination is said to insure quick and accurate reading under all conditions, and is most easily distinguished in light and shade. The glasses are being used at present in the



Fig. 3.—Cat's Eye Level Vial.

company's No. 1E and No. 4 levels. The level shown in Fig. 4 is distinctive in shape as well as a distinctively new line for the company. It has a heavy brass top plate, adjustable level and is 6 in. in length, and is full finished and not dipped. It can be used as a pocket level

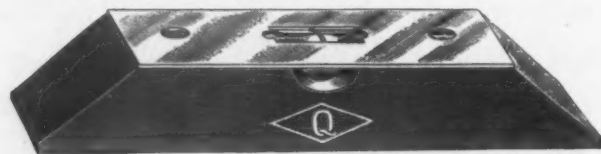


Fig. 4.—The Diamond Q Level.

by mechanics, and being slotted it may be used on a square as a plumb. It is also adapted to the use of amateurs and in the household.

### H & R Target Grip.

The Harrington & Richardson Arms Company, Worcester, Mass., has put on the market a target grip for revolvers, resulting in a combination of a medium priced revolver with a perfect, full grip. The extension hard rubber stock is fitted to the frame, and by having the regular stocks (furnished extra) can be exchanged for pocket use. The target grip can be furnished on the company's Automatic, Police Automatic, Premier, Police Premier, Double Actions, Models 1904, 1905, 1906, and the Hammerless 38 caliber. It will soon be ready for the Hammerless 32 caliber.



### Chicago Automatic Mouse and Rat Trap.

The Edwards-Hine Company, Grand Rapids, Mich., makes the self-acting mouse and rat trap illustrated

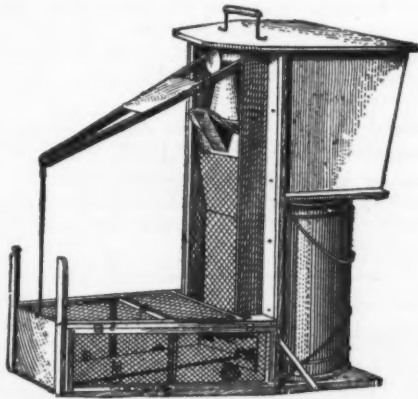


Fig. 1.—Chicago Automatic Mouse and Rat Trap.

herewith. Fig. 1 shows the exterior and Fig. 2 is a sectional view, indicating the method of operation. The

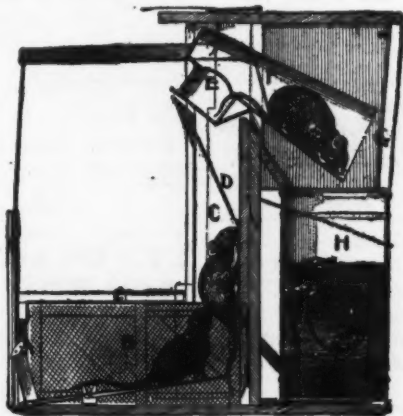


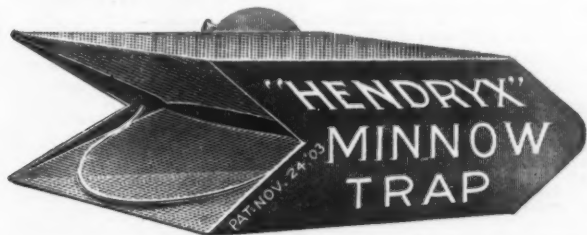
Fig. 2.—Sectional View of Trap in Operation.

rodent entering the trap causes the door to close, so that it must go forward up the wire covered passage to the balanced funnel. Once on the funnel the animal is by

its own weight thrown into a tank of water. The movement of the funnel at the same time reopens the door and thus resets the trap. It is urged in favor of the trap that it catches continually, requires no looking after, mice are not frightened away by seeing the struggles of captured ones or by smelling their dead bodies, and it is economical, as the first cost is the only outlay.

### The Hendryx Minnow Trap.

The A. B. Hendryx Company, New Haven, Conn., is offering the minnow trap shown herewith. It is constructed of galvanized iron and galvanized iron wire. A piece of galvanized iron extends across the top of the trap, under the wire, affording a place for the minnows to hide. A portion of a circular galvanized iron door is



The Hendryx Minnow Trap.

seen on the opposite side of the trap. This is hung on a pivot and covers a circular opening through which the hand may be passed to remove the imprisoned minnows. In the V-shaped opening in front is a bail by which the trap is carried. The trap is designed to be placed in the deepest part of a pool in a small stream, and can be used with or without bait.

THE SHERWOOD METAL WORKING COMPANY, Syracuse, N. Y., has issued an illustrated catalogue devoted to all-metal frame adjustable window screens. These are designed to take the place of wooden screens for windows and are arranged to be used either under the lower sash or as permanent outside screens, in the latter case the screens being removed without disturbing the fastenings.

## PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

Animal, Fish and Vegetable Oils—	per gal.
Linseed, State and Western, raw	40 @41
City, Boiled	44 @45
City, Raw	43 @44
Raw, Calcutta, in bbls.	70 @71
Lard, Prime, Winter	68 @72
Extra No. 1	51 @63
No. 1	49 @62
Cotton-seed, Crude, f.o.b. mill	29 @34
Summer Yellow, prime	39 @39 1/2
Summer White	40 @40 1/2
Yellow Winter	42 @43 1/2
Sperm, Crude	59 @60
Natural Winter	72 @74
Bleached Winter	75 @76
Bleached Winter, Extra	77 @78
Tallow, Prime	58 @60
Whale, Crude	35 @36
Natural Winter	46 @48
Bleached Winter	49 @51
Extra Bleached Winter	52 @54
Menhaden, Brown, Strained	41 @42
Light Strained	41 @42
Northern	40 @41
Southern	37 @38
Cocanut, Ceylon	67 @68 1/2
Cochin	8 @8 1/2
Cod, Domestic, Prime	42 @44
Newfoundland	44 @46
Red, Elaine	40 @42
Saponified	54 @56 1/2
Olive, Yellow	65 @70
Neatsfoot, Prime	65 @68
Palm, Lagos	6.95 @6.15

### Mineral Oils—

Black, 29 gravity, 25 @30 cold test	13 @13 1/2
29 gravity, 15 cold test	13 1/2 @14
Summer	12 1/2 @13
Cylinder, light filtered	29 1/2 @21
Dark, filtered	18 @19
Paraffine, 905-507 sp. gravity	14 1/2 @15
903 sp. gravity	13 1/2 @14
883 sp. gravity	11 @11 1/2
Red	13 1/2 @14

### Miscellaneous—

Barytes:	
White, Foreign	per ton \$18.50 @20.50
Amer. floated	per ton 19.00 @20.00
Off color	per ton 13.00 @15.50
Chalk, in bulk	per ton 3.00 @ 3.40
China Clay, Imported	per ton 11.50 @18.00
Cobalt, Oxide	per 100 lb 1.45 @ 2.60
Whiting, Commercial	per 100 lb .42 @ .52
Gilders	per 100 lb .55 @ .60
Ex. Gilders	per 100 lb .60 @ .65

### Putty, Commercial—

In bladders	per 70 @1.85
In bbls. or tubs	1.20 @1.45
In 1 lb to 5 lb cans	2.65 @2.95
In 12 1/2 to 50 lb cans	1.50 @1.90

### Spirits Turpentine—

In Oil bbls.	50 @50 1/2
In machine bbls.	50 1/2 @51

### Glue—

Cabinet	12 @15
Common Bone	7 1/2 @ 9
Extra White	13 @24
Fish, Liquid, 50 gal. bbls., per gal.	60 @1.20
Foot Stock, White	12 @14
Foot Stock, Brown	9 @11
German Common Hide	10 @12
German Hide	12 @18
French	10 @40
Irish	13 @16
Low Grade	10 @12
Medium White	14 @17

### Gum Shellac—

Bleached, Commercial	24 @25
Bone Dry	30 @31
Button	40 @60
Diamond I.	47 @48
Fine Orange	30 @35
A. C. Garnet	27 @28
G. A. L.	20 @23
Kala Button	18 @20
D. C.	49 @50
Octagon B.	38 @40
T. N.	24 @25
V. S. O.	47 @48

### Colors in Oil—

Black, Lampblack	12 @14
Blue, Chinese	36 @46
Blue, Prussian	32 @36
Blue, Ultramarine	13 @16
Brown, Vandyke	11 @14
Green, Chrome	12 @15
Sienna, Raw	12 @15
Sienna, Burnt	12 @15
Umber, Raw	11 @14
Umber, Burnt	11 @14

### White Lead, Zinc, &c.—

Lead, English white, in Oil	10 1/2 @10 3/4
Lead, American White:	
Lots of 500 lb or over, in Oil	@ 6 1/2
Lots less than 500 lb, in Oil	@ 7 1/4
Lead, White, in oil, 25 lb tin	@ 7 1/4
Lead, White, in oil, 12 1/2 lb tin	@ 7 1/4
Lead, White, in oil, 1 lb tin	@ 7 1/4
Lead, White, in oil, 1 to 5 lb	@ 8 1/2
Lead, American, Terms: On lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice.	

Zinc, American, dry	5 1/2 @ 5 3/4
Zinc, French:	
Antwerp, Red Seal, dry	8 1/2 @ 8 3/4
Antwerp, Green Seal, dry	10 1/2 @ 10 3/4
Paris, Red Seal, dry	8 1/2 @ 8 3/4
Paris, Green Seal, dry	10 1/2 @ 10 3/4
Zinc, V. M. French, in Poppy Oil:	
Green Seal:	
Lots of 1 ton and over	17 1/2 @13 1/2
Lots of less than 1 ton	13 1/2 @13 3/4
Zinc, V. M. French, in Poppy Oil:	
Red Seal:	
Lots of 1 ton and over	11 1/2 @11 3/4
Lots of less than 1 ton	11 1/2 @12 1/2
Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades, 1%: 25 bbls., 2%: 50 bbls., 4%.	

### Dry Colors—

Black, Carbon	5 1/2 @10
Black Drop, American	3 1/2 @ 8

Black Drop, English	5 @15
Black, Ivory	16 @20
Lamp, commercial	4 @ 6
Blue, Celestial	4 @ 6
Blue, Chinese	31 @33
Blue, Prussian	29 @31
Blue, Ultramarine	3 1/2 @15
Brown, Spanish	4 @ 1
Carmine, No. 40	3.10 @3.25
Green, Chrome, ordinary	3 1/2 @ 5
Green, Chrome, pure	17 @25
Lead, Red, bbls., 1/2 bbls., kegs.	@ 6 1/2
Litharge, bbls., 1/2 bbls., kegs.	@ 6 1/2
Ocher, American	per ton \$8.50 @16.00
American Golden	2 1/2 @ 3 1/2
French	1 1/2 @ 2
Foreign Golden	3 @ 4
Orange Mineral, English	10 @11
French	12 1/2 @13
German	10 @11
American	8 1/2 @ 8 3/4
Red, Indian, English	14 @ 6
American	3 @ 3 1/2
Red, Turkey, English	4 @ 10
Red, Tuscan, English	7 @10
Red, Venetian, Amer.	per 100 lb \$0.50 @1.25
English	per 100 lb \$1.15 @1.60
Sienna, Italian, Burnt and Powdered	3 @ 9
Italian, Raw, Powdered	3 @ 7
American, Raw	14 @ 2
American Burnt and Pow'd.	1 1/2 @ 2
Talc, French	per ton \$18.00 @25.00
American	per ton 15.00 @25.00
Terra Alba, French	per 100 lb .90 @ 1.00
English	per 100 lb .80 @ 1.00
American	per 100 lb .75 @ .90
American	per 100 lb No. 2 .40 @ .65
Umber, T'key, Rnt. & Pow.	2 1/2 @ 3
Turkey, Raw and Powdered	2 1/2 @ 3
Burnt, American	1 1/2 @ 2
Raw, American	1 1/2 @ 2
Yellow Chrome, Pure	13 @15
Vermilion, American Lead	7 @25
Quicksilver, bulk	@ .65
Quicksilver, bars	@ .65
English, Imported	65 @70
Chinese	30.90 @1.00

# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33½ @ 33½ & 10% signifies

that the price of the goods in question ranges from 33½ per cent. discount to 33½ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters, Blind—

Columbian and Domestic.....33½%  
North.....10%  
Zimmerman's—See Fasteners, Blind.

## Window Stop—

Ives' Patent.....35%  
Taplin's Perfection.....35%

## Ammunition—See Caps, Cartridges, Shells, &c.

## Anti-Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ½ doz. pairs, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

## Anvils—American—

Eagle Anvils.....½ lb. @ 2½¢  
Hay-Budden, Wrought.....½ lb. @ 2½¢  
Treuton.....½ lb. @ 2½¢

## Imported—

Swedish Solid Steel Sisco, Superior, ½ lb. @ 10¢  
Peter Wright & Sons, ½ lb. @ 8¢ to 34¢  
B. 11¢; 350 to 600 lb. 11¼¢.

## Anvil, Vise and Drill—

Millers Falls Co., \$18.00.....15¢10%

## Apple Parers—See Parers, Apple, &c.

## Aprons, Blacksmiths'—

Livingston Nail Co.....10%

## Augers and Bits—

Conn. Double Spur.....75¢80%  
Jennings' Patn., Bright.....65¢10%  
Black Lip or Blued.....65¢65¢

## Boring Mach. Augers—

Car Bits, 12-in. twist.....40¢10%  
Ford's Auger and Car Bits.....40¢10%  
Ft. Washington Auger Co., Conn. 35%

## Augers and Bits—

Fernald Pat. Auger Bits.....25%  
C. E. Jennings & Co., No. 10 ext. lip, R. Jennings' list, 25¢7½%

## Augers and Bits—

No. 30, R. Jennings' list.....50%  
Russell Jennings.....25¢10%  
L. Hommedieu Car Bits.....15%  
Mayhew's Counterbore Bits.....45%

## Augers and Bits—

Pugh's Black.....20%  
Pugh's Jennings' Pattern.....30%  
Snell's Auger Bits.....50%  
Snell's Heli Hangers.....60%  
Snell's Car Bits, 12-in. twist.....60%  
Snell's King Auger Bits.....50%  
Wright's Jennings' Bits.....50%

## Bit Stock Drills—

## See Drills, Twist.

## Expansive Bits—

Clark's Pattern, No. 1, ½ doz. 32¢  
No. 2, 18.....60¢10%  
Ford's, Clark's Pattern.....65¢65%

## Expansive Bits—

C. E. Jennings & Co., Steer's Pat. 25%  
Larvine Pat., small size, 18¢; large size, 25¢. 50%  
Swan's.....60%

## Gimlet Bits—

Common Dble. Cut.....\$3.00@3.25  
German Pattern, Nos. 1 to 10, \$4.75; 11 to 13, \$5.75

## Hollow Augers—

Bonney Pat., per doz. \$6.50@7.00  
Ames.....25¢10%  
Universal.....20%

## Ship Augers and Bits—

Ship Augers.....40¢10%  
Ford's.....35¢65%  
C. E. Jennings & Co., L. Hommedieu's.....6%  
Watrous'.....35¢65%  
Snell's.....40%

## Awl Hfts—See Handles, Mechanics' Tool.

## Awls—

Brad Awls:  
Handled.....gro. \$2.75@3.00  
Unhanded, Shidered.....gro. 65¢@6¢  
Unhanded, Patent.....gro. 60¢@7¢

## Peg Awls—

Unhanded, Patent.....gro. 31¢@34¢  
Unhanded, Shidered.....gro. 65¢@7¢

## Scratch Awls—

Handled, Com.....gro. \$3.50@4.00  
Handled, Socket.....gro. \$11.50@12.00

## Awl and Tool Sets—See Sets, Awl and Tool.

## Axes—

Single Bit, base weights: Per doz.  
First Quality.....\$1.75@5.00  
Second Quality.....\$1.25@4.50

## Double Bit, base weights:

First Quality.....\$7.00@7.50  
Second Quality.....\$6.50@6.75

## Axle Grease—

See Grease, Axle

## Axles—

Concord, Loose Collar.....4½¢5¢  
Concord, Solid Collar.....4½¢5¢  
No. 1 Common, Loose.....3½¢4½¢  
No. 1½ Com., New Style.....4½¢5¢  
No. 2 Solid Collar.....4½¢5¢

## Half Patent:

Nos. 7, 8, 11 and 12.....65¢65¢10%  
Nos. 13 to 14.....65¢65¢10%  
Nos. 15 to 18.....70¢70¢10%  
Nos. 19 to 22.....70¢70¢10%

## Boxes, Axle—

Common and Concord, not turned 10, 5¢6¢  
Common and Concord, turned 10, 6¢7¢  
Half Patent.....10, 9½¢10¢

## Bait—

Fishing—  
A Bait.....20%  
B Bait.....25%  
Competitor Bait.....20¢65%

## Balances—

Sash—  
Caldwell new list.....50%  
Fullman.....50¢10¢60%

## Spring—

Spring Balances.....50¢10¢80%  
Chatillon's:  
Light Spg. Balances.....50¢50¢10%  
Straight Balances.....40¢40¢10%  
Circular Balances.....50¢10%  
Large Dial.....30%

## Barb Wire—See Wire, Barb.

## Bars—

Crow—  
Steel Crowbars, 10 to 40 lb. per lb. @ 2½¢65%  
Towel—  
No. 10 Ideal, Nickel Plate.....½ gro. \$5.50

## Beams, Scale—

Scale Beams.....40%  
Chatillon's No. 1.....30%  
Chatillon's No. 2.....40%

## Beaters, Carpet—

Holt-Lyon Co.:  
No. 12 Wire Coppered ½ doz. \$0.80  
Tinned.....\$0.85  
No. 11 Wire Coppered ½ doz. \$1.15  
Tinned.....\$1.20  
No. 10 Wire Tinned.....½ doz. \$1.50

## Beaters, Egg—

Holt-Lyon Co.:  
Holt, per doz. No. 5, Jap'd, \$0.80  
No. A, Jap'd, \$1.15; No. B, Jap'd, \$1.85; No. 6, Jap'd, \$1.65, \$1.35.  
Lyon, Jap'd, per doz., No. 2, \$1.35.

## Beaters, Egg—

Taplin Mfg. Co.:  
Improved Dover, per gro. No. 60, \$4.00; No. 75, \$4.50; No. 100, \$7.00; No. 102, Tin'd, \$8.50; No. 150, Hotel, \$15.00; No. 152, Hotel Tin'd, \$17.00; No. 200, Tumbler, \$8.50; No. 202, Tumbler Tin'd, \$9.50; No. 300, Mammoth, per doz., \$25.00.

## Beaters, Egg—

Turner & Seymour Mfg. Co.:  
T. & S. Dover.....\$6.50

## Bellows—

Blacksmith, Standard List:  
Split Leather.....60¢10¢65%  
Grain Leather.....50¢50¢10%

## Hand—

Inch.....6 7 8 9 10  
Doz. \$5.00 5.50 6.00 6.50 7.50

## Molders—

Inch.....10 12 14 16  
Doz. \$7.50 9.00 12.00 15.00

## Bells—

## Cow—

Ordinary Goods.....75¢5¢75¢10¢5%  
High grade.....70¢10¢75%  
Jersey.....75¢10%  
Texas Star.....50%

## Door—

Home, R. & E. Mfg. Co.'s.....55¢10%  
Hand—  
Polished, Brass.....50¢10¢60%  
White Metal.....50¢10¢70¢75%  
Nickel Plated.....70¢65%  
Sicks.....70¢65%  
Cone's Globe Hand Bells.....33½¢35%

## Miscellaneous—

Farm Bells.....10, 2¼¢2½¢  
Church and School.....60¢60¢5%

## Belting—

Leather—  
Extra Heavy, Short Lap.....60¢65%  
Regular Short Lap.....60¢10¢5%  
Standard.....70¢65%  
Light Standard.....75%  
Cut Leather Lacing.....40¢10%  
Leather Lacing Sides, per sq. ft. 2½¢

## Rubber—

Agricultural (Low Grade).....75¢75¢5%  
Common Standard.....70¢70¢5%  
Standard.....70¢70¢5%  
Extra.....60¢5¢60¢10%  
High Grade.....50¢5¢60¢10%

## Bench Stops—

See Stops, Bench

## Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters.....20%

## Bicycle Goods—

John S. Lang's Son & Co.'s 1907 list:  
Chain, Parts, Spokes.....50%  
Tubes.....60%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

## Blocks—

Tackle—  
Common Wooden.....75¢75¢5%  
B. & L. B. Co.:  
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50¢10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50¢10%; Wire Rope Snatch, 50%.



**Cages, Bird—**

Hendryx Brass: Series 3000, 5000,  
1100, net list; 1200, 15%; 200, 300,  
500  
Hendryx Bronze: Series 700, 800, 30%  
Hendryx Enamelled.....35%

**Calipers—See Compasses.**

**Calks, Toe and Heel—**

Blunt, 1 prong, per lb., 4 1/4 @ 4 1/4¢  
Sharp, 1 prong, per lb., 4 1/4 @ 5 1/4¢  
Burke's, Blunt, 4 @ 4 1/4¢; Sharp, 4 @ 5 1/4¢  
Lautier, Blunt, 4 @ 4 1/4¢; Sharp, 4 @ 5 1/4¢  
Perkins, Blunt, 1 lb., 3.65¢; Sharp, 1 lb., 4.15¢

**Can Openers—**

See Openers, Can.

**Caps, Percussion—**

Eley's E. B. .... 50 @ 55¢  
G. D. .... per M 34 @ 35¢  
F. L. .... per M 40 @ 41¢  
G. E. .... per M 40 @ 50¢  
Musket .... per M 62 @ 63¢

**Primers—**

Berdan Primers, \$2 per M. 20¢5¢  
Primer Shells and Bullets. 15¢10¢  
All other primers per M. \$1.52 @ 1.60

**Carpet Stretchers—**

See Stretchers, Carpet.

**Cartridges—**

**Blank Cartridges:**  
32 C. F., \$5.50 ..... 10¢5¢  
32 C. F., \$7.00 ..... 10¢5¢  
22 Cal. Rim, \$1.50 ..... 10¢5¢  
32 Cal. Rim, \$2.75 ..... 10¢5¢  
B. B. Caps, Con. Ball, Sngd. \$1.90  
B. B. Caps, Round Ball ..... \$1.40  
Central Fire ..... 25¢  
Target and Sporting Rifle. 15¢5¢  
Primed Shells and Bullets. 15¢10¢  
Rim Fire, Sporting ..... 50¢  
Rim Fire, Military ..... 15¢5¢

**Castors—**

Bed ..... 65¢10¢  
Plate ..... 60¢5¢  
Philadelphia ..... 70¢10¢  
Acme Ball Bearing ..... 30¢  
Gem (Roller Bearing) ..... 70¢10¢10¢5¢  
Steel Gem Ball Bearing ..... 45¢  
Standard Ball Bearing ..... 45¢  
Yale (Double Wheel) low list. 40¢10¢

**Cattle Leaders—**

See Leaders, Cattle.

**Chain, Proof Coil—**

**American Coil, Straight Link:**  
3-16 1/4 5-16 7-16 1/2 9-16  
\$8.65 6.95 4.90 4.25 4.75 4.10  
% 3/4 1/2 to 1 1 1/2 to 1 3/4 inch.  
\$4.05 3.95 3.90 4.00

In cast lots, deduct 2¢.

German Coil ..... 60¢60¢5¢  
German Pattern Coil:  
6-0 to 1 ..... 70¢45¢70¢10¢  
2 and 3 ..... 60¢10¢10¢60¢10¢5¢  
4, 5 and 6 ..... 50¢10¢10¢50¢10¢5¢

**Halter—**

Halter Chains ..... 60¢60¢5¢  
German Pattern Halter Chains  
list July 24, '97 ..... 60¢10¢5¢  
Covert Mfg. Co.  
Halter ..... 35¢5¢

**Cow Ties—**

See Halters and Ties.

**Trace, Wagon, &c.—**

**Traces, Western Standard: 100 pr.**  
6 1/4-6-3, Straight, with ring. \$28.00  
6 1/4-6-2, Straight, with ring. \$29.00  
6 1/4-8-2, Straight, with ring. \$32.00  
6 1/4-10-2, Straight, with ring. \$37.00  
NOTE.—Add 2¢ per pair for Hooks  
Twist Traces: add per pair for Nos. 2,  
3, & 4; No. 1, 8¢; No. 0, 4¢ to price of  
straight link.

**Eastern Standard Traces, Wag-**  
**on Chain, &c.** 60¢10¢10¢50¢

**Miscellaneous—**

**Jack Chain, list July 10, '93:**  
Iron ..... 60¢10¢  
Brass ..... 60¢  
Safety and Plumbers' Chain,  
60¢10¢  
Gal. Pump Chain ..... lb., 4 1/2 @ 5¢  
Covert Mfg. Co.:  
Breast, Halter, Heel, Rein, Stal-  
lion ..... 40¢  
Oneida Community:  
American Halter, Dog and Kennel  
Chains ..... 35¢2 1/2 @ 40¢  
Niagara Dog Leads and Kennel  
Chains ..... 45¢60¢5¢  
Wire Goods Co.:  
Dog Chain ..... 70¢  
1st and 2nd Jointed Chain ..... 50¢

**Chain and Ribbon, Sash—**

Oneida Community:  
Steel Chain ..... 60¢  
Pullman:  
Bronze Chain, 60%; Steel Chain,  
60¢10¢  
Sash Chain Attachments, per set. 8¢  
Aluminum Sash Ribbon, per 100  
ft. \$1.25 @ 3.00  
Sash Ribbon Attachments, per set. 8¢

**Chalk—(From Jobbers.)**

Carpenters' Blue ..... gro., 50¢55¢  
Carpenters' Red ..... gro., 45¢50¢  
Carpenters' White ..... gro., 40¢45¢

**Checks, Door—**

Rardsley's ..... 45¢  
Pullman, per gro. .... 35¢40¢  
Russwin ..... 35¢40¢

**Chests, Tool—**

American Tool Chest Co.:  
Boys' Chests, with Tools ..... 50¢  
Youths' Chests, with Tools ..... 25¢  
Gentlemen's Chests, with Tools ..... 25¢  
Farmers', Carpenters', etc., Chests,  
with Tools ..... 20¢  
Machinists' and Pipe Fitters'  
Chests, Empty ..... 45¢  
Tool Cabinets ..... 45¢  
C. E. Jennings & Co.'s Machinists'  
Tool Chests ..... 7 1/2¢

**Chisels—**

**Socket Framing and Firmer**

**Standard List:** ..... 80¢

Buck Bros. .... 30¢

C. E. Jennings & Co.:  
Socket Firmer No. 10 ..... 25¢7 1/2¢  
Socket Framing No. 15 ..... 25¢7 1/2¢  
Swan's ..... 66¢@70¢  
L. & I. J. White Co. .... 30¢30¢5¢

**Tanged—**

**Tanged Firmers:** ..... 30¢45¢35¢

Buck Bros. .... 30¢

C. E. Jennings & Co. Nos. 191, 181 ..... 25¢

L. & I. J. White Co. .... 25¢45¢

**Cold—**

**Cold Chisels, good quality:** 13¢15¢

**Cold Chisels, fair quality:** 11¢12¢

**Cold Chisels, ordinary:** 9¢10¢

**Chucks—**

Almond Drill Chucks ..... 35¢

Almond Turret Six-Tool Chuck ..... 40¢

Beach Pat., each \$8.00 ..... 35¢45¢

Empire ..... 25¢

Blacksmiths' ..... 25¢

Jacobs' Drill Chucks, with Skinner Pat. .... 25¢

Pratt's Positive Drive ..... 25¢

Skinner Patent Chucks: ..... 25¢

Independent Lathe Chucks ..... 35¢

Universal, Reversible Jaws ..... 35¢

Combination, Reversible Jaws ..... 35¢

Drill Chucks, New Model, 25¢;  
Standard, 45¢; Skinner Pat. .... 40¢

25¢; Positive Drive ..... 40¢

Planer Chucks ..... 30¢

Face Plate Jaws ..... 35¢

Standard Tool Co.:  
Improved Drill Chuck ..... 45¢

Union Mfg. Co.:  
Combination, Nos. 1, 2, 3, 4, 5, 6,  
7, 8 and 17, 40%; No. 21 ..... 35¢

Scroll Combination, Nos. 83 and  
84 ..... 30¢

Geared Scroll, Nos. 33, 34 and 35 ..... 25¢

Independent Iron, Nos. 18 and 318 ..... 35¢

Independent Steel, No. 64 ..... 25¢

Union Drill, Nos. 600, 100, 101,  
102, 103, 104 ..... 35¢

Union Czar Drill ..... 25¢

Universal, 11, 12, 16, 17, 13, 14, 15, 40%  
Universal, No. 42 ..... 35¢

Iron Face Plate Jaws, Nos. 28, 30,  
48 and 50 ..... 35¢

Steel Face Plate Jaws, Nos. 70 and  
72 ..... 30¢

Westcott Patent Chucks:  
Lathe Chucks ..... 50¢

Little Giant Auxiliary Drill ..... 50¢

Little Giant Double Grip Drill ..... 50¢

Little Giant Drill, Improved ..... 50¢

Oneida Drill ..... 50¢

Scroll Combination Lathe ..... 50¢

Whitaker Mfg. Co.:  
National Drill ..... 25¢

**Clamps—**

Adjustable, Hammers ..... 20¢20¢5¢

Carriage Makers', P. S. & W. .... 50¢10¢

Co. .... 50¢10¢

Reily, Parallel ..... 35¢40¢

Myers' Hay Rack ..... 45¢

Lineman's Swedish Neverturn ..... 65¢

Wood Workers, Hammers ..... 40¢10¢

Saw Clamps, see Vices, Saw Filers'

**Cleaners, Drain—**

Iwan's Champion, Adjustable ..... 50¢

Iwan's Champion, Stationary ..... 40¢

**Sidewalk—**

Star Socket, All Steel, 1/2 doz. \$4.05 net

Star Shank, All Steel, 1/2 doz. \$3.24 net

W. & C. Shank, All Steel, 1/2 doz.,  
7 1/4 in., \$3.00; 5 in., \$3.25

**Cleavers, Butchers'—**

Foster Bros. .... 30¢

Fayette B. Plumb ..... 30¢

L. & I. J. White Co. .... 30¢

**Clippers, Horse and**

**Sheep—**

Chicago Flexible Shaft Company:  
1900 Chicago Horse, each. \$12.75

20th Century Horse, each. \$15.00

Lightning Belt Horse, each. \$15.00

Chicago Belt Horse, each. \$20.00

Stewart's Enclosed Gear  
Horse, each ..... 36.75

Stewart's Patent Sheep Shear-  
ing Machine, each ..... \$12.75

Stewart Enclosed Gear Shear-  
ing Machine, No. 8, each. \$9.75

**Clips, Axle—**

Regular Styles, list July 1, '05,  
80¢40¢10¢

**Cloth and Netting, Wire**

—See Wire, &c.

**Cocks, Brass—**

Hardware list:

Plain Bibbs, Globe, Kerosene,  
Racking, Liquor, Bottling,  
&c. .... 70¢

Compression Bibbs, 60¢10¢

**Coffee Mills—**

See Mills, Coffee.

**Collars, Dog—**

Nickel Chain, Walter B. Stevens &  
Son's list ..... 40¢

Leather, Walter B. Stevens & Son's  
list ..... 40¢

**Compasses, Dividers, &c.**

**Ordinary Goods:** ..... 70¢10¢75¢

Wm. Schollhorn Co.:  
Excelsior Dividers ..... 60¢

Lodi Dividers ..... 70¢10¢

**Conductor Pipe,—**

**L. C. L. to Dealers:**

**Galvanized Charcoal Copper.**  
**Steel Iron. 14, 16 & 20 oz.**

**Eastern:**  
70% 50¢17 1/2¢ 45¢  
**Central:**  
70% 55¢ 45¢

**Western and Southern:**  
65¢10¢ 50¢2 1/2¢ 40¢5¢  
**So. Western:**  
65¢5¢ 45¢5¢ 40¢2 1/2¢

**Terms, 60 days; 2% cash 10 days. Fac-**  
**tory shipments generally delivered.**

See also Eave Troughs.

**Coolers, Water—**

L. & G. Mfg. Co.:  
Gal. .... 2 3 4 6 8  
Galvanized, ea. \$1.85 \$2.00 \$2.25 \$2.50 \$3.00

Galvanized, Lined, slide handles,  
Gal. .... 2 3 4 6 8  
Each ..... \$1.95 \$2.15 \$2.40 \$3.30 \$4.15

White Enamelled ..... 10¢  
Agate Lined ..... 10¢

**Coopers' Tools—**

See Tools, Coopers'.

**Coppers' Soldering—**

Soldering Coppers, 3 lbs. to pair

and heavier, 2 1/2 @ 27¢; lighter

than 3 lb. to pair ..... 26¢29¢

**Cord—**

**Sash—**

Braided, Drab ..... lb. 35¢

Braided, White, Cotton, Nos. 8

to 12, 23¢; No. 7, 23 1/2¢; No. 6,

24 1/2¢. In lots of 12 doz. or

over, 1 cent less per pound.

Cable Laid Italian, lb., No. 18 ..... 37¢

Italian, lb., A. No. 18, 25¢; B, 22¢

Common India ..... lb., 11¢11 1/2¢

Cotton Sash Cord, Twisted, lb. @ 20¢

Patent Russia ..... lb. 21¢

Cable Laid Russia ..... lb. 21¢

India Hemp, Br'd'd ..... lb. 21¢

India Hemp, Twisted ..... lb. 13¢14¢

Patent India, Twisted ..... lb. 47¢

1' x 1' Braided, cotton, No. 6, 1/2 lb.,

27 1/2¢; No. 7, 28 1/2¢; Nos. 8 to 12, 26¢

26¢; 7, 28 1/2¢; 6, 27 1/2¢.

Harmony Cable Laid Italian, Nos. 7

to 10 ..... lb. 23¢

Philman:  
Wire Sash Cord ..... 10¢

Sash Cord Attachments, per doz. 10¢

Samson, Nos. 8 to 12:

Braided, 1/2 lb. Drab Cotton,

55¢; Italian Hemp, 40¢ @

50¢; Linen, 65¢; White Cot-

ton, 50¢; Spot Cord ..... 50¢

Manassas, White, 1/2 lb. 40¢

Manassas, Drab, 1/2 lb. 45¢

Phoenix, White, Nos. 8 to 12, 27¢;

Silver Lake, per lb.:

A, Drab, 45¢; A, White, 40¢;

B, Drab, 40¢; B, White, 35¢;

Italian Hemp, 40¢; Linen ..... 57 1/2¢

See also Chain and Ribbon.

**Wire, Picture—**

List July 10, 1906 ..... 30¢ @

Hendryx Standard Wire Picture Cord,

old list, 85¢10¢

Turner & Stanton Co. Wire Picture

Cord ..... 85¢10¢

**Cradles—**

**Grain** ..... 40¢12 1/2¢

**Crayons—**

White Round Crayons, Cases, 100

gro., \$6.50 @ \$7.50 at factory, but

lower prices made by jobbers

Zelnicke's Lumber, 1/2 gro.

White and Purple, Indelible ..... 7.50

Blue, Red, Green, Yellow and

Terra Cotta, \$6.50; Black ..... 4.50

Giant Lumber, 5/4 in. x 15-16 in.

round, all colors, \$12.00; Indel-

ible, \$14.00; Blacks ..... \$10.00

Genuine Soapstone, Metal Workers',

5 in. x 1/4 in. Round, \$2.50; 5 in. x

1/4 in. Square, \$1.75; 5 x 1/2 x 3-16,

\$2.50; 5 x 1/4 x 3-16 ..... \$3.00

**Crooks, Shepherds'—**

Fort Madison, per doz., Heavy, \$5.50,

**Fasteners, Blind—**

Zimmerman's .....50&10%  
Walling's .....40&10%  
Upon's Patent .....40%

**Cord and Weight—**

Ives and Titan .....33%  
Corrugated—  
Acme Corrugated Fasteners .....70%

**Faucets—**

Cork Lined .....50&10@60%  
Metallic Key, Leather Lined, .....60&10@70%

Red Cedar .....40&5@10&10&5%  
Petroleum .....70&10@75%

B. & L. Co.: .....60&10%  
Star .....60%

West Lock .....50&10%  
John Sommer's Peerless Tin Key .....40%

John Sommer's Boss Tin Key .....50%  
John Sommer's Victor Mt. Key .....50&10%

John Sommer's Duplex Metal Key .....40%  
John Sommer's Diamond Lock .....50%

John Sommer's I. X. L. Cork Lined .....50%  
John Sommer's Reliable Cork Lined .....50%

John Sommer's Chicago Cork Lined .....50%  
John Sommer's O. K. Cork Lined .....50%

John Sommer's No Brand, Cedar .....50%  
John Sommer's Perfection, Cedar .....40%

Self Measuring:  
Enterprise, # doz. \$3.00 .....40&10%  
Lane's, # doz. \$3.00 .....40&10%

National Measuring, # doz. \$3.00 .....40&10%

**Felloe Plates—**

See Plates, Felloe.

**Files— Domestic—**

List Nov. 1, 1899.

Best Brands .....70&10@75&10%  
Standard Brands .....75&10@80%

Lower Grade .....75&10@80&10%

Imported—  
Stubs' Tapers, Stubs' list, July 24, '97 .....35 1-5@40%

**Fixtures, Fire Door—**

Allith Underwriters' Approved .....50%

Richards Mfg. Co.:  
Universal, No. 103; Special, No. 104 .....\$3.75

Fusible Links, No. 94 .....\$0.50  
Expansion Bolts, No. 197 .....\$0.50

**Grindstone—**

Net Prices: 15 17 19 21  
Per doz. \$3.60 3.85 4.15 4.65

E. & W. Co. .....\$0.50  
Reading Hardware Co. .....\$0.50

**Fodder Squeezers—**

See Compressors.

**Forks—**

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Iowa Dig-Ray Potato .....60&10%  
Victor, Hay, # doz. \$1.50 .....\$0.50

Victor, Manure .....\$0.50  
Victor, Header .....\$0.50

Champion, Hay .....\$0.50  
Champion, Header .....\$0.50

Champion, Manure .....\$0.50  
Columbia, Hay .....\$0.50

Columbia, Manure .....\$0.50  
Columbia, Spading .....\$0.50

Hawkeye Wood Barley .....\$0.50  
W. & C. Potato Digger .....\$0.50

Acme Hay .....\$0.50  
Acme Manure, 4 time .....\$0.50

Dakota Header .....\$0.50  
Jackson Steel Barley .....\$0.50

Kansas Header .....\$0.50  
W. & C. Favorite Wood Barley .....\$0.50

Plated.—See Spoons.

**Frames— Wood Saw—**

White, S'p't Bar, per doz. \$7.50@8.00

Red, S'p't Bar, per doz. \$1.90@1.25

Red, Dbl. Brace, per doz. \$1.40@1.50

**Freezers, Ice Cream—**

Qt. 1 2 3 4  
Each .....\$1.25 \$1.60 \$1.90 \$2.20 \$2.50

**Fruit and Jelly Presses—**

See Presses, Fruit and Jelly.

**Fry Pans—See Pans, Fry.****Fuse— Per 1000 Feet.**

Hemp .....\$2.75  
Cotton .....\$2.20

Waterproof Spl. Taped .....\$3.65  
Waterproof Dbl. Taped .....\$4.40

Waterproof Tpl. Taped .....\$5.15

**Gates, Molasses and Oil—**

Stebbins' Pattern .....75@80%

**Gauges—**

Marking, Mortise, &c. 50@50&10%

Chapin-Stephens Co.:  
Marking, Mortise, &c. 50&50&10%

Diston's Marking, Mortise, &c. 67%  
Wire, Brown & Sharpe's .....33%

Wire, Morse's .....25%  
Wire, P. S. & W. Co. .....33%

**Gimlets— Single Cut—**

Numbered assortments, per gross.

Nail, Metal, No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

Nail, Metal, No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 7



D. & H. Scovill.....27½%  
Am. Fork & Hoe Co. (Scovill Pat-  
tern).....60%

**Handled—**

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Cronk's Weeding, No. 1, \$2.00; No. 2, \$2.50  
Star Double Bit.....\$3.20  
Ft. Madison Crescent Hoe.....70¢&10¢  
Ft. Madison Crescent Cultivator Hoe.....70¢&10¢  
Ft. Madison Mattock Hoe.....70¢&10¢  
Regular Weight.....½ doz. 40¢&5¢  
Junior Size.....½ doz. \$1.00  
Ft. Madison Sprouting Hoe, ½ doz., 60¢&10¢  
Ft. Madison Dixie Tobacco Hoe.....75¢&10¢  
Kretzinger's Cut Easy.....70¢&10¢  
Warren Hoe.....45¢&10¢  
W. & C. Ivanhoe.....75¢&10¢  
B. B. 6 in., Cultivator Hoe.....\$3.40  
B. B., 6 in.....\$3.50  
Acme Weeding.....½ doz. net, \$1.30  
W. & C. Lining Shovel Hoe, ½ doz., \$3.25

**Hoisting Apparatus—**  
See Machines, Hoisting.**Holders—Bit—**

Angular, ½ doz. \$24.00.....45¢&10¢

**Door—**

Bardeley's, Iron, 40%; Brass and Bronze.....25%  
Empire.....50%  
Pullman.....30%  
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip.....50%  
Superior.....33½%

**File and Tool—**

Nicholson File Holders and File Handles.....33½¢&40%

**Fruit Jar—**

Triumph Fruit Jar Holder, ½ gross, \$10.80; ½ doz. \$1.25

**Trace and Rein—**

Fernald Double Trace Holder, ½ doz. pairs.....\$1.25  
Dash Rein Holder, ½ doz. pairs.....\$1.25

**Hones—Razor—**

Pike Mfg. Co., Belgian and Swat, 50%; German.....33½%

**Hooks—Cast Iron—**

Bird Cage, Reading.....60%  
Clothes Line, Reading List.....40%  
Coat and Hat, Reading.....45¢&20¢  
Coat and Hat, Wrightville.....60¢&5¢  
Harness, Reading List.....40%  
**Wire—**  
Belt.....80%  
Wire C. & H. Hooks.....75¢&10¢  
Bradley Metal Clasp Wire, Coat and Hat, 70¢&10¢; Ceiling.....70¢&10¢  
Columbian Hdw. Co., Gem.....70¢&10¢  
Parker Wire Goods Co., King.....70¢&10¢  
Wire Goods Co.:  
Acme, 60¢&10¢; Chief, 70¢; Crown, 75%; Czar, 65%; V. Brace, 75%; Czar Harness, 60¢&10¢  
**Wrought Iron—**  
Box, 6 in., per doz., \$1.00; 8 in., \$1.25; 10 in., \$1.50.....  
Cotton.....½ doz. \$1.05¢&1.15¢  
Wrought Staples, Hooks, &c.—  
See Wrought Goods

**Miscellaneous—**

Hooks, Bench, see Staps, Bench.  
Bush, Light, doz., \$6.20; Medium, \$6.75; Heavy, \$7.65  
Grass, best, all sizes, per doz. \$3.00  
Grass, common grades, all sizes, per doz.....\$1.50  
Whiffletree.....lb. 5¢&6¢  
**Hooks and Eyes:**  
Brass.....60¢&60¢&10¢  
Malleable Iron.....70¢&70¢&10¢  
Covey Mfg. Co. Gate and Nuttle Hooks.....40%  
Ft. Madison Cut-Easy Corn Hooks, ½ doz. \$3.25 net  
Turner & Stanton Co., Cup and Shoulder.....80¢&10¢  
Bench Hooks—See Bench Staps  
Corn Hooks—See Knives, Corn.

**Horse Nails—**

See Nails, Horse.

**Horse Shoes—**

See Shoes, Horse.

**Hose, Rubber—**

Garden Hose, ¾-in.-inch:  
Competition.....ft. 5¢&6¢  
3-ply Guaranteed.....ft. 8¢&9¢  
4-ply Guaranteed.....ft. 10¢&11¢  
Cotton Garden, ¾-in., coupled:  
Low Grade.....ft. 8¢&9¢  
Fair Quality.....ft. 10¢&11¢

**Irons—Sad—**

From 4 to 10.....lb. 3¢&5¢  
B. B. Sad Irons.....lb. 3¢&5¢  
Mrs. Potts', cents per set:  
Nos. 50 55 60 65  
Jap'd Tops.....83 80 93 91  
Tin'd Tops.....88 85 98 95  
New England Pressing.....lb. 3¢&4¢

**Bar and Corner—**

Richards Mfg. Co., Bar, 60¢&10¢; Corner.....60%

**Pinking—**

Pinking Irons.....½ doz. 60¢

**Irons, Soldering**

See Copiers.

**Jacks, Wagon—**

Covert Mfg. Co.:  
Auto Screw.....30¢&2¢; Steel, 45%  
Lockport.....50%

Lane's Steel.....30¢&5¢  
Richards' Tiger steel, No. 130.....50¢  
Smith & Hemenway Co.'s.....25%

**Ladder—**

Richards Mfg. Co., Ladder Jacks.....50%

**Kettles—**

Brass, Spun, Plain.....20¢&25¢  
Enameled and Cast Iron—See Ware, Hollow.

**Knives—**

Butcher, Kitchen, &c.—

Foster Bros' Butcher, &c.....30%  
Wilkinson Shear & Cutlery Co.....60%

**Corn—**

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%  
Withington Acme, ½ doz. \$2.65; Dent, \$2.75; Adj. Serrated, \$2.20; Serrated, \$2.10; Yankee No. 1, \$1.50; Yankee No. 2, \$1.15.

**Drawing—**

Standard List.....80%  
C. E. Jennings & Co., Nos. 45, 46, 47.....25¢&7½¢  
Jennings & Griffin, Nos. 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.....16%  
L. & J. J. White.....20¢&25%

**Hay and Straw—**

Serrated Edge, per doz. \$3.50¢&5.75  
Iwan's Sickle Edge.....½ doz. \$9.50  
Iwan's Serrated.....½ doz. \$10.00

**Miscellaneous—**

Farriers'.....½ doz. \$3.00¢&3.25  
Wootenholm's.....½ doz. \$3.00¢&3.25

**Knobs—**

Base, 2½-in., Birch, or Maple, Rubber Tip.....gro. \$1.25¢&1.40  
Carriage, Jap., all sizes.....gro. 40¢&45¢

Door, Mineral.....doz. 65¢&70¢  
Door, Por. Jap'd.....doz. 70¢&75¢  
Door, Por. Nickel.....doz. \$2.05¢&2.15  
Bardeley's Wood Door, Shutters, &c. 15%

**Lacing, Leather—**

See Belting, Leather—

**Ladders, Store, &c.—**

Allith Mfg. Co., Reliable.....50%  
Lane's Store.....25%  
Myers' Noiseless Store Ladders.....50%  
Richards Mfg. Co.:  
Improved Noiseless, No. 112.....50%  
Climax Shelf, No. 113.....50%  
Trolley, No. 109.....50%  
**Ladles, Melting—**  
L. & G. Mfg. Co. (low list).....20%  
P. S. & W.....40¢&10¢  
Reading.....60%

**Lanterns—Tubular—**

Regular, No. 0.....doz. \$1.35¢&1.50  
Side Lift, No. 0.....doz. \$1.60¢&1.75  
Hinge Globe, No. 0.....doz. \$1.60¢&1.75  
Other Styles.....40¢&40¢  
**Bull's Eye Police—**  
3-inch.....\$1.25¢&1.50  
**Latches—Thumb—**  
Roggin's Latches, with screw.....doz. 35¢&40¢

**Door—**

Allith Mfg. Co., Reliable and Allegator, 50%; Reliable Cold Storage, 50%  
Crouk & Carrier Mfg. Co., No. 101, ½ doz. \$2.90  
Richards' Bull Dog, Heavy, No. 125.....50¢&5¢  
Richards' Trump, No. 127.....\$1.50  
**Leaders, Cattle—**  
Small.....doz. 50¢; large, 60¢  
Covert Mfg. Co.:  
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

**Leathers, Pump—**

See Pumps—

**Lifters, Transm—**

R. & E.....10%

**Lines—**

Wire Clothes, Nos. 18 19 20  
100 feet.....\$2.50 2.25 2.00  
75 feet.....\$1.10 1.80 1.65  
Barnum Cordage Works:  
Solid Braided Chalk, Nos. 0 to 3.....40%  
Solid Braided Masons'.....30%  
Silver Lake Braided Chalk, No. 0, \$1.00; No. 1, \$1.50; No. 2, \$1.00; No. 3, \$1.50.....  
Masons' Lines, Shade Cord, &c.:  
White Cotton, No. 3/4, \$1.50; No. 4, \$2.00; No. 4½, \$2.50; Colors, No. 3/4, \$1.75; No. 4, \$2.25; No. 4½, \$2.75; Linen, No. 3/4, \$2.50; No. 4, \$3.50; No. 4½, \$4.50.....  
Tent and Awning Lines, No. 5, White Cotton, \$1.50; Drab Cotton, \$1.50.....  
Clothes Lines, White Cotton, 50 ft., \$2.75; 60 ft., \$3.25; 70 ft., \$3.75; 75 ft., \$4.00; 80 ft., \$4.25; 90 ft., \$4.75; 100 ft., \$5.25.....  
Turner & Stanton Co.:  
Solid Braided Chalk, Masons' and Awning Lines.....40%  
Clothes Lines, White Cotton.....20%  
Shade Cord, Cotton or Linen.....20%

**Locks—Cabinet—**

Cabinet Locks.....33½%

**Door Locks, Latches, &c—**

NOTE.—Net Prices are very often made on these goods.

Reading Hardware Co.....40%  
R. & E. Mfg. Co.....10%

**Padlocks—**

R. & E. Mfg. Co. Wrought Steel and Brass.....75¢&10¢

**Sash, &c.—**

Ives' Patent:  
Bronze and Brass, 55¢&5¢; Crescent, 60%; Iron, 60%; Window Ventilating, 40¢&20¢; Robinson Pat. Ventilating Sash Lock, 33½%.

Pullman Patent Ventilating Lock.....35%  
Reading Sash Locks.....40%

**Machines—Boring—**

Com. Up't, without Augers.....\$2.00¢&2.25

Com. Ang'l'r, without Augers.....\$2.25¢&2.50

Swan's Improved.....40¢&10¢  
Jennings', Nos. 1 and 4.....25¢&7½¢  
Muller's Falls.....5.15  
Snell's, Upright, \$2.65; Angular, \$2.90

**Corking—**

Reisinger Invincible Hand Power.....½ doz. \$18.00

**Fence—**

Williams' Fence Machine.....each, \$5.50

**Hoisting—**

Moore's Anti-Friction Chain Hoist.....30%  
Moore's Hand Hoist, with Lock.....20%  
Moore's Cyclic, High Speed Chain Hoist.....25%  
**Ice Cutting—**  
Chandler's.....12½%

**Washing**

Boss Washing Machine Co.: Per doz.  
Boss No. 1.....\$57.00  
Boss Rotary.....\$57.00  
Champion Rotary Banner No. 1.....\$57.00  
Standard Champion No. 1.....\$50.00  
Standard Perfection.....\$27.00  
Cincinnati Square Western.....\$33.00  
Unedda American, Round.....\$33.00

**Maillets—**

Hickory.....45¢&50¢  
Lignumvitae.....45¢&50¢  
Tinners' Hickory and Applewood.....doz. 45¢&50¢

**Mangers, Stable—**

Swift Iron Works.....50%

**Mats, Door—**

Acme Flexible Steel.....50%  
Elastic Steel (W. G. Co.), new list.....50%

**Mattocks—**

See Picks and Mattocks.

**Milk Cans—See Cans, Milk.****Mills, Coffee, &c.—**

Enterprise Mfg. Co.....20¢&25¢  
National list an. 1, 1902.....30%  
Parker's Columbia and Victoria.....33½¢  
Parker's Box and Side.....50¢&10¢  
Swift, Lane Bros. Co.....30%

**Motors, Water—**

Divine's Red Devil.....30%  
Lippincott's.....30%

**Mowers, Lawn—**

NOTE.—Net prices are generally quoted

Cheapest, 10-in., \$2.00; 12-in., \$2.10, etc.

Cheap, 10-in., \$2.25; 12-in., \$2.45, etc.

Better Grade, 10-in., \$3.00; 12-in., \$3.25, etc.

High Grade.....\$4.50 4.75 5.00 5.25  
Continental.....60%  
Great American.....70%  
Great American Ball B'g, new list.....70%  
Quaker City.....70%  
Pennsylvania.....60%  
Pennsylvania, Jr., Ball Bearing.....\$4.10¢&5¢  
Pennsylvania Golf.....50%  
Pennsylvania Horse.....33½¢&5¢  
Pennsylvania Pony.....40¢&5¢

**Granite State:**

Style A, Low Wheel.....70%  
Style B, Low Wheel.....70%  
Style C, High Wheel, spcl. list.....70¢&10¢  
Style D, High Wheel, spcl. list.....70%  
Philadelphia:  
Styles M., S., C., K., T.....70¢&10¢&5¢  
Style A, all Steel.....60¢&10¢&5¢  
Style E, High Wheel.....70¢&10¢&5¢  
Drexel and Gold Coin, special list.....40%  
Horse.....40¢&5¢  
Pony.....40¢&5¢  
36-in. Horse.....30¢&10¢  
Eagle Horse.....30¢&5¢  
I. X. L. Horse.....50%

**Nails—**

Wire Nails and Brads, Miscellaneous.....87½¢&87½¢&10¢  
Cut and Wire, See Trade Report.  
Hungarian, Finishing, Upholsterers' &c. See Tacks.

**Horse—**

Nos. 4 7 8 9 10  
Anchor.....23 21 20 19 18.....40¢&5¢  
Coleman.....13 12 11 11.....net  
New Haven.....23 21 20 19 18.....40¢&5¢  
Livingston.....19 18 17 16 16.....10%  
Western.....½ lb 8¢&4¢  
Jobbers' Special Brands.....per lb 9¢&10¢

**Picture—**

Brass H'd.....55 60 70 .. gro  
Por. Head.....1.10 1.10 1.10 .. gro

**Nippers—**

See Pliers and Nippers.

**Nuts—**

Cold Punched: Off Hat.  
Square, Blank or Tapped.....4.80¢  
Hexagon, Blank or Tapped.....5.10¢  
Square, B'K, C, T. & R.....5.10¢  
Hexagon, B'K, C, T. & R.....5.70¢  
Not Punched:  
Square, Blank.....5.70¢  
Hexagon, Blank.....5.80¢  
Square, Tapped.....5.10¢  
Hexagon, Tapped.....6.00¢

**Oakum—**

Rest.....lb. 6½¢  
U. S. Navy.....lb. 6¢  
Navy.....lb. 5¢  
Plumbers' Spun Oakum.....23¢@3¢

**Oil Tanks—See Tanks, Oil.****Oilers—**

Steel, Copper Plated.....75%  
Cased or Paragon:  
Brass and Copper.....50¢&10¢  
Zinc.....65¢&10¢  
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 20%; Old Pattern, Nos. 1, 2, 3, 50%.

American Tube & Stamping Co.:  
Spring Bottom Cans.....70¢&10¢  
Railroad Oilers, &c.....60¢&10¢  
Maple City Mfg. Co.:  
Spring Bottom Cans.....70¢&10¢  
Railroad Oilers, &c.....60¢&10¢

**Openers—Can—Per doz.**

Sprague, Iron Handle.....30¢&35¢  
Sprague, Wood Handle.....35¢&40¢  
Sardine Scissors.....\$1.75¢&3.00  
Yankee Can and Bottle Opener, ½ doz., net, \$0.75; Little Gem, ½ doz., net.....\$0.65

**Egg—**

Hartigan Nickel Plate, ½ doz., \$2.00; Silver Plate, \$4.00.

**Packing—**

Asbestos Packing, Wick and Rope.....20¢@25¢

**Rubber—**

(Fair quality goods.)  
Sheet, C. I.....11¢@12¢  
Sheet, C. O. 8.....11¢@12¢  
Sheet, C. B. 8.....12¢@13¢  
Sheet, Pure Gum.....10¢@15¢  
Sheet, Red.....40¢@50¢  
Jenkins' 96, ½ lb. 80¢

**Miscellaneous—**

American Packing.....lb. 7¢@10¢  
Cotton Packing.....lb. 18¢@25¢  
Italian Packing.....lb. 9¢@12½¢  
Jute.....lb. 4¢@4½¢  
Russia Packing.....lb. 8¢@11¢

**Pails, Water, Well, &c.—**

See Buckets.

**Pans—Dripping—**

Standard List.....65¢&7½¢@70¢  
Edwards, Royal Blue.....65¢&7½¢

**Fry—**

Nos. .... 1 2 3 4 5  
Per doz. \$0.75 0.80 0.90 1.10 1.30

**Refrigerator, Galva—**

Inch.....12 14 16 18  
Per doz.....\$1.75 2.25 2.80 3.15

**Paper—Building Paper**

Asbestos: lb.  
Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft. 3½¢@5¢  
Roll Board or Building Felt, 3-32 and ¼ in., 45 to 60 lb., per 100 sq. ft.....4¢  
Mill Board, Sheet, 40 x 40 in., 1-32 to ¼ in.....3¢@5¢

Per roll  
Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll.....48¢@53¢  
Medium weight, 30 lbs. to roll.....56¢@70¢  
Heavy weight, 40 lbs. to roll.....75¢@78¢

Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, \$1.10; 4 ply, \$1.25.  
Deafening Felt, 9, 6 and 4½ sq. ft. to lb. ton.....\$54.50  
Red Rope Roofing, 250 sq. ft. per roll.....\$1.75

**Tarred Paper—**

1 ply (roll 400 sq. ft.), ton.....\$34.00¢&38.00

2 ply, roll 108 sq. ft.....65¢  
3 ply, roll 108 sq. ft.....85¢  
Slater's Felt (roll 500 sq. ft.).....80¢

**Sand and Emery—**

Flint Paper and Cloth.....50¢&10¢  
Garnet Paper and Cloth.....25%  
Emery Paper and Cloth.....50¢&10¢&60%

**Parers—Apple—**

Goodell Co.:  
Family Bay State.....½ doz. \$15.00  
Improved Bay State.....½ doz. \$36.00  
New Lightning.....½ doz. \$7.00  
Turn Table.....½ doz. \$6.00  
White Mountain.....½ doz. \$3.00  
Bonanza Improved.....each \$7.50  
Dandy.....each \$10.00  
Eureka Improved.....each \$20.00  
New Century.....each \$20.00  
Ranger.....each \$25.00  
Livingston Nail Co.:  
Daisy.....½ doz. \$1.00  
Little Star.....½ doz. \$5.00  
Rocking Table.....½ doz. \$6.20  
Reading Hardware Co.:  
Advance.....½ doz. \$1.00  
Baldwin.....½ doz. \$3.25  
Reading.....½ doz. \$8.25

**Potato—**

Saratoga.....½ doz. \$7.00  
White Mountain.....½ doz. \$6.00

**Picks and Mattocks—**

List.....75¢&5¢

**Pinking Irons—**

See Irons, Pinking.

**Pins, Escutcheon—**Brass ..... 50¢ @ 50¢ 10%  
Iron, list Nov. 11, '95 ..... 60¢ @ 60¢ 10%**Pipe, Cast Iron Soil—**Standard, 2-6 in. .... 60¢ @ 10¢  
Extra Heavy, 2-6 in. .... 70¢ @ 10¢  
Fittings, Standard and Heavy,  
75¢ @ 10¢**Pipe, Merchant—**

Consumers, Carloads.		Steel.		Iron.	
Bk.	Gale.	Bk.	Gale.	Bk.	Gale.
1/4 & 1/2 in.	64	57	41	41	41
3/4 in.	66	52	59	41	41
1 in.	68	55	61	49	49
3/4 to 6 in.	72	62	66	56	56
7 to 12 in.	69	61	61	46	46

**Pipe, Vitrified Sewer—**Carload lots.  
Standard Pipe and Fittings, 3  
to 24 in., f.o.b. factory:  
First-class ..... 82%  
Second-class ..... 85%**Pipe, Stove—**

Per 100 joints.		C. L. L. C. L.	
Edwards' Nested:			
5 in., Standard Blue	6.25	7.25	
6 in., Standard Blue	6.75	7.75	
7 in., Standard Blue	7.75	8.75	
5 in., Royal Blue	7.00	8.00	
6 in., Royal Blue	7.50	8.50	
7 in., Royal Blue	8.50	9.50	
Wheeling Corrugating Co.'s Nested:			
5 in., Uniform Color	6.15	7.15	
6 in., Uniform Color	6.65	7.65	
7 in., Uniform Color	7.65	8.65	

**Planes and Plane Irons—****Wood Planes—**Bench, first qual. .... 30¢ @ 30¢ 10%  
Bench, second qual. .... 40¢ @ 40¢ 10%  
Molding ..... 25¢ @ 25¢ 10%  
Chapin-Stephens Co.:  
Bench, First Quality ..... 30%  
Bench, Second Quality ..... 40%  
Molding and Miscellaneous ..... 25%  
Toy and German ..... 30%  
Union ..... 60%**Iron Planes—**Chaplin's Iron Planes ..... 50¢ @ 10%  
Union ..... 60%**Plane Irons—**Wood Bench Plane Irons, list  
Dec. 12, '06 ..... 25%  
Buck Bros. .... 30%  
Chapin-Stephens Co. .... 25%  
Union ..... 60%  
L. & I. J. White ..... 20¢ @ 25%**Planters, Corn, Hand—**

Kohler's Eclipse ..... 40¢ doz. \$3.00

**Plates—**

Felloe ..... 10¢ @ 10¢ 10%

**Pliers and Nippers—**Button Pliers ..... 75¢ @ 75¢ 10¢ 5%  
Gas burner, per doz., 5 in., \$1.25  
@ \$1.30; 6 in., \$1.45 @ \$1.50.  
Gas Pipe, 7 8 10 12 in.  
\$2.00 \$2.25 \$2.75 \$3.50**Acme Nippers—**Cronk & Carrier Mfg. Co.:  
Improved Button ..... 80%  
American Button ..... 80%  
T. & S. Linemen's ..... 50%  
Stub's Pattern ..... 45%  
Combination and others ..... 35%  
Heller's Farriers' Nippers, Pincers  
and Tools ..... 40¢ @ 40¢ 10¢ 5%  
P. S. & W. Tinner's Cutting Nip-  
pers ..... 40%  
Wm. Schollhorn Co.:  
Bernard, 35%; Elm City, 35%;  
Paragon, 50%; Lodi, 55%.  
Swedish Side, End and Diagonal Cut-  
ting Pliers ..... 50%  
Utica Drop Forge & Tool Co.:  
Pliers and Nippers, all kinds ..... 40%**Plumbs and Levels—**Chapin-Stephens Co.:  
Plumbs and Levels ..... 30¢ @ 30¢ 10%  
Chapin's Imp. Brass Cor. .... 40¢ @ 40¢ 10%  
Pocket Levels ..... 30¢ @ 30¢ 10%  
Extension Sights ..... 30¢ @ 30¢ 10%  
Machinists' Levels ..... 40¢ @ 40¢ 10%  
Diston's Plumbs and Levels ..... 60¢ @ 10%  
Diston's Pocket Levels ..... 60¢ @ 10%  
Stanley's Duplex ..... 30%  
Woods' Extension ..... 35%**Points, Glaziers'—**Bulk and 1-lb. papers ..... 10¢ 9¢ 4¢  
1/4-lb. papers ..... 10¢ 9¢ 4¢  
1/2-lb. papers ..... 10¢ 9¢ 4¢**Police Goods—**Manufacturers' Tents ..... 25¢ @ 25¢ 5%  
Tower's ..... 25%**Polish—Metal, Etc—**Prestolite Liquid, No. 1 (1/4 pt.) ..... 40¢  
doz. \$3.00; No. 2 (1 qt.) ..... 50¢  
Prestolite Paste ..... 60%George William Hoffman:  
U. S. Metal Polish Paste, 3 oz.  
boxes, 50¢ doz. 50¢; 1 lb.  
boxes, 50¢ doz. 50¢; 1 lb.  
boxes, 50¢ doz. 50¢.  
U. S. Liquid, 8 oz. cans, 50¢ doz.  
Barkeepers' Friend Metal Polish, 50¢  
doz., \$1.75.**Stove—**Black Eagle Benzine Paste, 5 lb. cans,  
10¢ lb 10¢  
Black Eagle, Liquid, 1/4 pt. cans ..... 10¢  
Black Jack Paste, 1/4 lb. cans, 50¢ doz. 50¢  
Black Kid Paste, 5 lb. cans, each, 50¢  
Ladd's Black Beauty Liquid, per  
100 tins ..... 50¢  
Joseph Dixon's, 50¢ gr. 50¢ ..... 10%  
Dixon's Plumbago ..... 10%  
Fireside ..... 10%  
Gem, 50¢ gr. 50¢ ..... 10%  
Japanese ..... 10%  
Jet Black ..... 10%  
Peerless Iron Enamel, 10 oz. cans ..... 50¢  
doz. \$1.50**Peppers, Corn—**1 qt. Square ..... doz. \$0.80; gro. \$8.75  
1 qt. Round ..... doz. \$0.90; gro. \$10.00  
1 1/2 qt. Square ..... doz. \$1.00; gro. \$11.00  
2 qt. Square ..... doz. \$1.25; gro. \$13.50**Post Hole and Tree Au-  
gers and Diggers—**

See also Diggers, Post Hole, &amp;c.

**Posts, Steel—**Steel Fence Posts, each, 5 ft., 42¢;  
6 ft., 46¢; 6 1/2 ft., 48¢.  
Steel Hitching Posts ..... each \$1.30**Potato Parers—**

See Parers, Potato.

**Pots, Glue—**Enameled ..... 35¢ @ 40%  
Tinned ..... 30¢ @ 10%**Powder—**In Canisters:  
Duck, 1 lb. .... each 45¢  
Fine Sporting, 1 lb. .... each 75¢  
Rifle, 1/2 lb. .... each 16¢  
Rifle, 1 lb. .... each 25¢  
In Kegs:  
12 1/2-lb. kegs ..... \$3.50  
25-lb. kegs ..... \$4.60  
King's Semi-Smokeless:  
Keg (25 lb. bulk) ..... \$6.50  
Half Keg (12 1/2 lb. bulk) ..... \$3.50  
Quarter Keg (6 1/4 lb. bulk) ..... \$1.90  
Case 24 (1 lb. cans bulk) ..... \$9.50  
Half case (1 lb. cans bulk) ..... \$4.50  
King's Smokeless:  
Keg (25 lb. bulk) ..... \$12.00  
Half Keg (12 1/2 lb. bulk) ..... 6.25 7.75  
Quarter Keg (6 1/4 lb. bulk) ..... 3.25 4.00  
Case 24 (1 lb. cans bulk) ..... 14.00 17.00  
Half case 12 (1 lb. c. bk.) ..... 7.25 8.75**Presses—**Enterprise Mfg. Co. .... 20¢ @ 25%  
Fruit and Jelly—  
Seal Presses—  
Morrill's No. 1, 50¢ doz., \$20.00 ..... 50%**Pruning Hooks and Shears**

See Shears.

**Pullers, Nail—**Cyclops ..... 50%  
Miller's Falls, No. 3, 50¢ doz., \$12.00 ..... 35% @ 10%  
Morrill's No. 1, Nail Puller, 50¢ doz., \$20.00 ..... 50%  
Pearson No. 1, Cyclone Spike Puller, 50¢ each \$30.00 ..... 50%  
The Scranton Co. Case Lots:  
No. 21 (large) ..... \$5.50  
No. 3H (small) ..... \$5.00  
Smith & Hemenway Co.:  
Diamond B ..... 70%  
Giant ..... 50%  
Staple Pullers, Utica and Davi-  
son ..... 60%**Pulleys, Single Wheel—**

Inch	1 1/2	2	3
Awning or Tackle, doz.	\$0.30	45	60 1.05
Hay Fork, Squirrel or Solid Eye, doz., 4 in., \$1.25; 5 in., \$1.55			
Inch	1 1/2	2	3
Hot House, doz.	\$0.65	85	1.20
Inch	1 1/2	2	3
Screw, doz.	\$0.16	19	23 .30
Inch	1 1/2	2	3
Side, doz.	\$0.25	40	55 60
Inch	1 1/2	2	3

**Sash Pulleys—**Common Frame: Square or  
Round End, per doz, 1 1/2 and  
2 in. .... 17¢ @ 20¢  
Auger Mortise, no Face Plate  
per doz, 1 1/2 and 2 in. .... 20¢ @ 25¢  
Acme, No. 35, 1 in., 19¢; 2 in., 24¢  
American Pulley Co.:  
Wrought Steel American Plain  
Axle ..... 50¢ @ 10%  
Wrought Steel, Eagle ..... 17¢ @ 20¢  
Fox-All-Steel, Nos. 3 and 7, 2 in. .... 50%  
Grand Rapids All Steel Noiseless ..... 50%  
Niagara, No. 25, 1 1/2 in., 19¢; 2  
in. .... 20¢  
No. 26, 2 in., 14¢; 2 1/2 in., 16¢  
Star, No. 26, 1 1/2 in., 19¢; 2 in., 20¢  
Tackle Blocks—See Blocks.**Pumps—**Cistern ..... 60%  
Pitcher Spout ..... 75¢ @ 75¢ 10%  
Wood Pumps, Tubing, &c. .... 80%  
Barnes Dbl. Acting (low list) ..... 40¢ @ 5%  
Barnes Pitcher Spout ..... 75¢ @ 10%  
Contractors' Rubber Diaphragm ..... 50%  
Daisy Spray Pump ..... 50¢ doz. \$6.50Flint & Walling's Fast Mail Hand,  
(low list) ..... 50%  
Flint & Walling's Fast Mail (low  
list) ..... 50%  
Flint & Walling's Tight Top Pitcher ..... 75¢ @ 10%  
National Specialty Mfg. Co. Measur-  
ing, Nos. 2, \$6.00; 3, \$5.50 ..... 30%  
Myers' Pumps (low list) ..... 40¢ @ 5%  
Myers' Power Pumps ..... 40¢ @ 5%  
Myers' Spray Pumps ..... 40¢ @ 5%**Pump Leathers—**Plunger and Valve Leathers—Per  
gro.:  
No. .... 1 2 3 4  
\$5.00 6.00 7.00 8.00Cup Leathers—Per 100:  
Inch ..... 2 1/2 3 3 1/2 4  
\$5.00 7.00 9.00 12.00**Punches—**Saddlers' or Drive, good ..... doz. 50¢ @ 75¢  
Spring, single tube, good qual-  
ity ..... \$1.75  
Revolving (4 tubes) ..... doz. \$3.50  
Bemis & Call Co.'s Cast St'l Drive ..... 50%  
Morrill's Nos. 1AA, 1A, 1B, 1C,  
1D, \$15.00 ..... 50%  
Hercules, 1 die, each \$5.00 ..... 50%  
Niagara Hollow Punches ..... 40%  
Niagara Solid Punches ..... 35¢ @ 10%  
Wm. Schollhorn Co.:  
Belt and Ticket, Bernard, 35%;  
Paragon, 50%; Lodi ..... 55%  
Tinner's Hollow, P., S. & W. Co. 40%  
Timers' Solid, P., S. & W. Co. 40%  
doz., \$1.41 ..... 40%**Rail—Barn Door, &c.—**Sliding Door, Painted Iron ..... 2 1/2 @ 2 1/2¢  
Sliding Door, Wrought Brass,  
1 1/2 in., lb., 36¢ ..... 30%  
Allith Mfg. Co.: Reliable Hanger  
Track ..... 50%  
Cronk's:  
Double Braced Steel Rail, 1/2 ft. 3 1/4¢  
O. N. T. Rail ..... \$3.12  
Griffin's:  
XXX, 100 ft., 1 x 3-16 in., \$3.25;  
1 1/4 x 3-16 in., \$3.75.  
Hinged Hanger, 100 ft., 1 x 3-16  
in., \$3.50; 1 1/4 x 3-16 in., \$4.00.  
Lane's:  
Hinged Track, 100 ft. .... \$3.45  
O. N. T., 100 ft., 1 x 3-16 in., \$3.00; 1 1/4  
in., \$3.45; 1 1/2 in., \$4.00.  
Standard, 1 1/4 in. .... 100 ft. \$4.00  
Lawrence Bros.:  
1 x 3-16 in., 100 ft., \$7.50; 1 1/4 x  
3-16 in., \$8.75 ..... 55¢ @ 1 1/2%McKinney's:  
Hinged Hanger Track, 1/2 ft., 11¢,  
60¢ @ 5%  
1 x 3-16 Track ..... 55¢ @ 1 1/2%  
Myers' Stagon Track ..... 60¢ @ 5%  
Richards' Mfg. Co.:  
Common, 1 x 3-4 in., \$3.00; 1 1/4 x  
3-16 in., \$3.25; 1 1/2 x 3-16 in., \$3.50.  
Special Hinged Hanger Rail ..... 60¢ @ 10%  
Lag Screw Rail, No. 65 ..... 50%  
Gauge Trolley Track, 1/2 ft., No. 31,  
9¢; No. 32, 14¢; No. 33, 20¢.  
No. 50, 61, \$3.00; 62, \$3.25; 63, \$3.50; 64,  
\$4.00; 65, \$4.25; 66, \$4.50; 67, \$4.75; 68, \$5.00;  
69, \$5.25; 70, \$5.50.  
Rakes—  
NOTE—Many goods are sold  
at net prices.  
Fort Madison Red Head Lawn ..... \$3.25  
Fort Madison Blue Head Lawn ..... \$2.75  
Cronk's:  
Steel Garden: Champion, 75%;  
Ideal, 80%; Victor ..... 80¢ @ 25%  
Queen City Lawn, 50¢ doz., 20 teeth,  
\$5.50; 24, \$5.00 ..... net  
Anticlog Lawn, 50¢ doz. .... \$1.00  
Malleable Garden ..... 70¢ @ 10%  
Ideal Steel Garden, 50¢ doz., 12 teeth,  
\$15.00; 14, \$16.00; 16, \$18.00 ..... 80%  
Kohler's:  
Lawn Queen, 20-tooth ..... 50¢ doz. \$3.15  
Lawn Queen, 24-tooth ..... 50¢ doz. \$3.25  
Paragon, 20-tooth ..... 50¢ doz. \$2.70  
Paragon, 24-tooth ..... 50¢ doz. \$2.75  
Steel Garden, 14-tooth ..... 50¢ doz. \$2.60  
Malleable Garden, 14-tooth, 50¢ doz. \$2.00 @ 25%Razors, Horse—  
Diston's ..... 75%  
Heller Bros. 70¢ @ 75¢ 10¢ 5%  
Liveright Bros.' Gold Medal 70¢ @ 75%  
McCaffrey's American Standard ..... 60¢ @ 10%  
New Nicholson ..... 70¢ @ 10%  
See also Files.  
Razors—  
Liana Bo-ras-le ..... 80%  
Fox Razors, 50¢ doz. No. 12, \$2.00; No. 14, \$2.00; No. 16, \$2.00; No. 18, \$2.00; No. 20, \$2.00; No. 22, \$2.00; No. 24, \$2.00; No. 26, \$2.00; No. 28, \$2.00; No. 30, \$2.00; No. 32, \$2.00; No. 34, \$2.00; No. 36, \$2.00; No. 38, \$2.00; No. 40, \$2.00; No. 42, \$2.00; No. 44, \$2.00; No. 46, \$2.00; No. 48, \$2.00; No. 50, \$2.00; No. 52, \$2.00; No. 54, \$2.00; No. 56, \$2.00; No. 58, \$2.00; No. 60, \$2.00; No. 62, \$2.00; No. 64, \$2.00; No. 66, \$2.00; No. 68, \$2.00; No. 70, \$2.00; No. 72, \$2.00; No. 74, \$2.00; No. 76, \$2.00; No. 78, \$2.00; No. 80, \$2.00; No. 82, \$2.00; No. 84, \$2.00; No. 86, \$2.00; No. 88, \$2.00; No. 90, \$2.00; No. 92, \$2.00; No. 94, \$2.00; No. 96, \$2.00; No. 98, \$2.00; No. 100, \$2.00; No. 102, \$2.00; No. 104, \$2.00; No. 106, \$2.00; No. 108, \$2.00; No. 110, \$2.00; No. 112, \$2.00; No. 114, \$2.00; No. 116, \$2.00; No. 118, \$2.00; No. 120, \$2.00; No. 122, \$2.00; No. 124, \$2.00; No. 126, \$2.00; No. 128, \$2.00; No. 130, \$2.00; No. 132, \$2.00; No. 134, \$2.00; No. 136, \$2.00; No. 138, \$2.00; No. 140, \$2.00; No. 142, \$2.00; No. 144, \$2.00; No. 146, \$2.00; No. 148, \$2.00; No. 150, \$2.00; No. 152, \$2.00; No. 154, \$2.00; No. 156, \$2.00; No. 158, \$2.00; No. 160, \$2.00; No. 162, \$2.00; No. 164, \$2.00; No. 166, \$2.00; No. 168, \$2.00; No. 170, \$2.00; No. 172, \$2.00; No. 174, \$2.00; No. 176, \$2.00; No. 178, \$2.00; No. 180, \$2.00; No. 182, \$2.00; No. 184, \$2.00; No. 186, \$2.00; No. 188, \$2.00; No. 190, \$2.00; No. 192, \$2.00; No. 194, \$2.00; No. 196, \$2.00; No. 198, \$2.00; No. 200, \$2.00; No. 202, \$2.00; No. 204, \$2.00; No. 206, \$2.00; No. 208, \$2.00; No. 210, \$2.00; No. 212, \$2.00; No. 214, \$2.00; No. 216, \$2.00; No. 218, \$2.00; No. 220, \$2.00; No. 222, \$2.00; No. 224, \$2.00; No. 226, \$2.00; No. 228, \$2.00; No. 230, \$2.00; No. 232, \$2.00; No. 234, \$2.00; No. 236, \$2.00; No. 238, \$2.00; No. 240, \$2.00; No. 242, \$2.00; No. 244, \$2.00; No. 246, \$2.00; No. 248, \$2.00; No. 250, \$2.00; No. 252, \$2.00; No. 254, \$2.00; No. 256, \$2.00; No. 258, \$2.00; No. 260, \$2.00; No. 262, \$2.00; No. 264, \$2.00; No. 266, \$2.00; No. 268, \$2.00; No. 270, \$2.00; No. 272, \$2.00; No. 274, \$2.00; No. 276, \$2.00; No. 278, \$2.00; No. 280, \$2.00; No. 282, \$2.00; No. 284, \$2.00; No. 286, \$2.00; No. 288, \$2.00; No. 290, \$2.00; No. 292, \$2.00; No. 294, \$2.00; No. 296, \$2.00; No. 298, \$2.00; No. 300, \$2.00; No. 302, \$2.00; No. 304, \$2.00; No. 306, \$2.00; No. 308, \$2.00; No. 310, \$2.00; No. 312, \$2.00; No. 314, \$2.00; No. 316, \$2.00; No. 318, \$2.00; No. 320, \$2.00; No. 322, \$2.00; No. 324, \$2.00; No. 326, \$2.00; No. 328, \$2.00; No. 330, \$2.00; No. 332, \$2.00; No. 334, \$2.00; No. 336, \$2.00; No. 338, \$2.00; No. 340, \$2.00; No. 342, \$2.00; No. 344, \$2.00; No. 346, \$2.00; No. 348, \$2.00; No. 350, \$2.00; No. 352, \$2.00; No. 354, \$2.00; No. 356, \$2.00; No. 358, \$2.00; No. 360, \$2.00; No. 362, \$2.00; No. 364, \$2.00; No. 366, \$2.00; No. 368, \$2.00; No. 370, \$2.00; No. 372, \$2.00; No. 374, \$2.00; No. 376, \$2.00; No. 378, \$2.00; No. 380, \$2.00; No. 382, \$2.00; No. 384, \$2.00; No. 386, \$2.00; No. 388, \$2.00; No. 390, \$2.00; No. 392, \$2.00; No. 394, \$2.00; No. 396, \$2.00; No. 398, \$2.00; No. 400, \$2.00; No. 402, \$2.00; No. 404, \$2.00; No. 406, \$2.00; No. 408, \$2.00; No. 410, \$2.00; No. 412, \$2.00; No. 414, \$2.00; No. 416, \$2.00; No. 418, \$2.00; No. 420, \$2.00; No. 422, \$2.00; No. 424, \$2.00; No. 426, \$2.00; No. 428, \$2.00; No. 430, \$2.00; No. 432, \$2.00; No. 434, \$2.00; No. 436, \$2.00; No. 438, \$2.00; No. 440, \$2.00; No. 442, \$2.00; No. 444, \$2.00; No. 446, \$2.00; No. 448, \$2.00; No. 450, \$2.00; No. 452, \$2.00; No. 454, \$2.00; No. 456, \$2.00; No. 458, \$2.00; No. 460, \$2.00; No. 462, \$2.00; No. 464, \$2.00; No. 466, \$2.00; No. 468, \$2.00; No. 470, \$2.00; No. 472, \$2.00; No. 474, \$2.00; No. 476, \$2.00; No. 478, \$2.00; No. 480, \$2.00; No. 482, \$2.00; No. 484, \$2.00; No. 486, \$2.00; No. 488, \$2.00; No. 490, \$2.00; No. 492, \$2.00; No. 494, \$2.00; No. 496, \$2.00; No. 498, \$2.00; No. 500, \$2.00; No. 502, \$2.00; No. 504, \$2.00; No. 506, \$2.00; No. 508, \$2.00; No. 510, \$2.00; No. 512, \$2.00; No. 514, \$2.00; No. 516, \$2.00; No. 518, \$2.00; No. 520, \$2.00; No. 522, \$2.00; No. 524, \$2.00; No. 526, \$2.00; No. 528, \$2.00; No. 530, \$2.00; No. 532, \$2.00; No. 534, \$2.00; No. 536, \$2.00; No. 538, \$2.00; No. 540, \$2.00; No. 542, \$2.00; No. 544, \$2.00; No. 546, \$2.00; No. 548, \$2.00; No. 550, \$2.00; No. 552, \$2.00; No. 554, \$2.00; No. 556, \$2.00; No. 558, \$2.00; No. 560, \$2.00; No. 562, \$2.00; No. 564, \$2.00; No. 566, \$2.00; No. 568, \$2.00; No. 570, \$2.00; No. 572, \$2.00; No. 574, \$2.00; No. 576, \$2.00; No. 578, \$2.00; No. 580, \$2.00; No. 582, \$2.00; No. 584, \$2.00; No. 586, \$2.00; No. 588, \$2.00; No. 590, \$2.00; No. 592, \$2.00; No. 594, \$2.00; No. 596, \$2.00; No. 598, \$2.00; No. 600, \$2.00; No. 602, \$2.00; No. 604, \$2.00; No. 606, \$2.00; No. 608, \$2.00; No. 610, \$2.00; No. 612, \$2.00; No. 614, \$2.00; No. 616, \$2.00; No. 618, \$2.00; No. 620, \$2.00; No. 622, \$2.0



**Saws—**

Atkins:	
Circular	45%
Band	50@50.10
Butcher Saws	35%
Cross Cuts	40%
One-Man Cross Cut	40%
Narrow Cross Cut	50%
Hand, Rip and Panel	35.5%
Miter Box and Compass	40%
Mulay, Mill and Drag	45%
Wood Saws	10.10
Chapin-Stephens Co.	
Turning Saws and Frames	30.30@10%
Diamond Saw & Stamping Works	
Sterling Kitchen Saws	30.10@10%
Diston's:	
Circular, Solid and Ins'ted Tooth	50%
Band, 2 to 15 in. wide	60%
Band, 4 to 13 in. wide	60%
Crosscuts	45%
Narrow Crosscuts	50%
Mulay, Mill and Drag	50%
Framed Woodsaws	25%
Woodsaw Blades	25%
Woodsaw Rods, Tinned	15%
Hand Saws, Nos. 12, 19, 9, 16, d100	25%
108, 120, 76, 77, 8	25%
Hand Saws, Nos. 7, 107, 107 1/2, 3, 1	25%
0, 00, Combination	25%
Compass, Key Hole, &c.	25%
Butcher Saws and Blades	30%
E. Jennings & Co.'s:	
Back Saws	16%
Butcher Saws	25.75
Compass and Key Hole Saws	33.75
Framed Wood Saws	25.75
Hand Saws	12%
Wood Saw Blades	33.75@75%
Millers Falls:	
Butcher Saws	15.10
Star Saw Blades	15.10
Massachusetts Saw Works:	
Victor Kitchen Saws	40.10@50%
Butcher Saws and Blades	35.40
Peace & Richardson's Hand Saws	30%
Simonds:	
Circular Saws	45%
Crecent Ground Cross Cut Saws	40%
One-Man Cross Cuts	40.10
Gang Mill, Mulay and Drag Saws	45%
Hand Saws	50%
Back Saws	25.25@75%
Butcher Saws	35.35@75%
Hand Saws	25.25@75%
Hand Saws, Bay State Brand	45%
Compass, Key Hole, &c.	25.25@75%
Wood Saws	40.75
Wheeler, Madden & Clemson Mfg.	
Co.'s Cross Cut Saws	50%

**Hack Saw Blades and Frames—**

Atkins' Hack Saw Blades A A A	25%
Diston's:	
Concave Blades	25%
Keystone Blades	35%
Hack S & Frames	30%
Simonds File Co.	30%
C. E. Jennings & Co.'s:	
Hack Saw Frames, Nos. 175, 180	40.75
Hack Saws, Nos. 175, 180, complete	40.75
Goodell's Hack Saw Blades	40.10
Griffin's Hack Saw Frames	35.50
Griffin's Hack Saw Blades	35.50
Star Hack Saws and Blades	15.10
Sterling Hack Saw Blades	30.10@50%
Sterling Hack Saw Frames	30.10@10%
Sterling Power Hack Saw Machines	
each, No. 1, \$25.00; No. 2, \$30.00	10%
Victor Hack Saw Blades	20%
Victor Hack Saw Frames	40%
Whitaker Mfg. Co.:	
National Hand Blades	40%
National Hand Frames	30.65
National Power Blades	30.10

**Scroll—**

Barnes, No. 1, \$15	25%
Barnes' Scroll Saw Blades	40%
Barnes' Velociped Power Scroll Saw	
without boring attachment	\$18
with boring attachment	\$20
Leater, complete	\$10.00
Rogers, complete	\$3.50 and \$4.00
	15.10

**Scales—**

Family, Turnbull's	50@50.10
Counter:	
Hatch, Platform, 1/2 oz. to 4 lbs.	1.00
Two Platforms, 1/2 oz. to 8 lbs.	1.00
Union Platform, Plain	\$1.70@1.90
Union Platform, Std.	\$1.95@2.15
Chattillon's:	
Eureka	25%
Favorite	40%
Crocker's Trip Scales	50%
The Standard Portables	40%
The Standard R. R. and Wag-	
on	50.10

**Scrapers—**

Box, 1 Handle	doz. \$2.00@2.25
Box, 2 Handle	doz. \$3.50@3.75
Ship	Light, \$2.00; Heavy, \$1.50
Chapin-Stephens Co.	Box, 30.30@10%
Richards Mfg. Co.	Foot, 60%

**Screws—Bench and Hand**

Beach, Iron, doz. 1 in.	\$2.50@2.75
2 1/2; 1 1/2	\$1.00@3.25; 1 1/4, \$3.50@3.75
Bench, Wood	20.60@20.10
Hand, Wood	70.10@70.10@10%
Chapin-Stephens Co., Hand	70.70@10.25

Coach, Lag and Hand Rail—	
Lag, Cone Point	75.10@10%
Coach, Gimlet Point	75.10@10%
Hand Rail	70.70@10.75

**Jack Screws—**

Standard List	70.10@75%
Millers Falls	50.10@10%
Swett Iron Works	70.75

**Machine—**

Cut Thread, Iron, Brass or	
Brass:	
Flat Head or Round Head	50@50.10
Fillister Head	40@10.10

Rolled Thread, F. H. or R. H.	
Iron	75.10
F. H. or R. H., Brass, Nos.	
8 to 14	65.10

**Set and Cap—**

Set (Iron)	75.10@75%
Set (Steel), net advance over	
Iron	25%
Sq. Hd. Cap	70.10@75%
Rd. Hd. Cap	70.10@75%
Rd. Hd. Cap	50.75
Fillister Hd. Cap	60.75

**Wood—**

List July 23, 1908.	
Flat Head, Iron	87.45@
Round Head, Iron	85.45@
Flat Head, Brass	85.45@
Round Head, Brass	77.45@
Flat Head, Bronze	75.45@
Round Head, Bronze	72.45@
Drive Screws	87.45@

**Scroll Saws—**

See Saws, Scroll.

**Scythes—**

Grass, No. 1, Plain	\$6.25@6.75
Clipper, Bronzed Webb	\$6.50@7.00
No. 3 Clipper, Pol'd Webb	
	\$6.75@7.25
No. 6 Clipper and Solid Steel	
	\$7.00@7.50
Bush, Weed and Bramble, No. 2	
	\$6.50@7.00
Grain, No. 1	\$8.25@8.75
Bronzed Webb, No. 1	\$8.50@9.00
Nos. 3 and 4 Clipper, Grain	
	\$8.75@9.25
Solid Steel, No. 6	\$9.25@9.75

**Seeders, Raisin—**

Enterprise	25@30%
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**Sets—Awl and Tool—**

Fray's Adj. Tool Handles, Nos. 1, \$12;	
2, \$18; 3, \$12; 4, \$9; 5, \$7	50%
Millers Falls Adj. Tool Handles	
No. 1, \$12; No. 4, \$12; No. 5, \$18	20.10

**Garden Tool Sets—**

Ft. Madison Three Plows, Hoe, Rake	
and Shovel	\$1 doz sets \$9.00

**Sets, Nail—**

Octagon	gro. \$3.50@3.75
Buck Bros	27%
Cannon's Diamond Point	40.10
Mayhew's	40.10
Snell's Corrugated Cup Pt.	40.10
Snell's Knurled Cup Pt.	40.10
Victor Knurled Cup Pt.	40.10

**Rivet—**

Regular list	75@75.10
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**Saw—**

Atkin's:	
Criterion	40%
Adjustable	40%
Diston's Star, Monarch and Tri-	
umph	30%
Morrill's No. 1	\$15.00
Nos. 3 and 4, Cross Cut	\$20.00
No. 5, Mill	\$30.00
Nos. 10, 11, 95	\$15.00
No. 1 Old Style	\$10.00
Special	\$16.25
Giant Royal Cross Cut	\$40.00
Royal, Hand	\$4.50
Tamtor Positive	\$1 doz. \$6.75

**Shaving—**

Fox Shaving Sets, No. 30	
	\$1 doz, net, \$21.00
Smith & Hemenway Co.'s	75%

**Sharpeners, Knife—**

Pike Mfg. Co.:	
Fast Cut Pocket Knife Hones	
\$1 doz.	\$1.50
Mounted Kitchen Sand Stone	
\$1 doz.	\$1.50
Natural Grit Carving Knife	
\$1 Hones, \$1 doz.	\$3.00
Quick Cut Emery Carving	
Knife Hones, \$1 doz.	\$1.50
Quick Edge Pocket Knife	
Hones, \$1 doz.	\$2.50

**Skate—**

Smith & Hemenway Co., Eureka	50%
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**Shaves, Spoke—**

Iron	doz. \$1.25
Wood	doz. \$2.00
Hailey's (Stanley R. & L. Co.)	45%
Chapin-Stephens Co.	30.30@10%
Goodell's	\$9.00
	15.10

**Shears—**

Cast Iron	7 8 9 in.
Best	\$16.00 18.00 20.00 gro.
Good	\$13.00 15.00 17.00 gro.
Cheap	\$5.00 6.00 7.00 gro.
Straight Trimmers, &c.	
Best quality, Nickel	70.70@10%
Tailors' Shears	40.40@10%
Heinrich's Tailor's Shears	40.40@10%
Wilkinson Shear & Cutlery Co.	
Sheep, 1900 list	30.10@5%
Grass	50.10
Horse or Mule	50.10
J. Wiss & Sons Co.:	
Best Quality Jap'd	60.10
Best Quality Nickeld	50.10
Tailors	25%

**Tinners' Snips—**

Steel Blades	20.10@20.10
Steel Laid Blades	40.10@50%

Forged Handles, Steel Blades, Berlin	50%
Heinrich's Snips	40%
Jennings & Griffin Mfg. Co.'s 6 1/2	
10 in.	33.75
Niagara Snips	40%
P. S. & W. Forged Handles	25%
W. R. & W. Forged Handles	40.10
J. Wiss & Sons Co.:	
Wiss Forged Steel	25%

**Pruning Shears—**

Cronk's Hand Shears	33.75
Cronk's Wood Handle Shears	33.75
Disston's Combined Pruning Hook	
and Saw, \$1 doz.	\$18.00
Disston's Pruning Hook only, \$1 doz.	
\$12.00	25%
John T. Henry Mfg. Co.:	
Pruning Shears, all grades	40%
P. S. & W. Co.	40.10
Columbian Cutlery Co.:	
Hedge, Wilcut Brand	60.10
Lawn and Border, Wilcut Brand	60.10

**Sheaves—Sliding Door—**

Reading	40%
R. & E. list	15%

**Sliding Shutter—**

Reading list	40%
R. & E. list	10%

**Shells—Shells, Empty—**

Brass Shells, Empty:	
Climax, 10 and 12 gauge	65.10
Club, Rival, 65.10; First Quality	60.45

**Paper Shells, Empty:**

New Rapid, 10, 12, 16 and 20 gauge	25.10
Climax, 10 and 12 gauge; Acme, 10,	
12, 16 and 20 gauge; Ideal, 10, 12,	
16 and 20 gauge; Leader grade	25.45
Union, League, 12 and 12 gauge	
Rival Grade	25%
New Climax, Deference, 10, 12, 14,	
16 and 20 gauge; Climax, 14, 16	
and 20 gauge	20.45
Challenge, Monarch, 10, 12, 16 and	
20 gauge; League, Union, 14, 16	
and 20 gauge; Repeater Grade	20%

**Shells, Loaded—**

Loaded with Black Powder	40%
Loaded with Smokeless Powder,	
medium grade	40.45
Loaded with Smokeless Powder,	
high grade	40.10@10%
Union Metallic Cartridge Co.:	
New Club, Black Powders	40%
Nitro Club, Smokeless Powders	40.45
Arrow, Smokeless Powders	40.10@10%
Winchester:	
Smokeless Repeater Grade	40.45
Smokeless Leader Grade	40.10@10%
Black Powder	40%

**Shingles, Metal—Per Sq.**

Edwards Mfg. Co.:	
Painted	Galv.
14 x 20	\$1.25
10 x 14	6.25
7 x 10	4.75
Wheeling Corrugating Co.:	
Dixie, 14 x 20 in.	\$1.25
Dixie, 10 x 14 in.	4.50
Dixie, 7 x 10 in.	6.75

**Shoes, Horse, Mule, &c.—**

F. O. Pittsburg:	
Iron	per keg \$4.10
Steel	per keg \$3.85
Burden's, all sizes	per keg \$3.90

**Shot—**

Drop, up to B	25-lb. bag, \$1.85
Drop, B and larger	2.10
Buck	2.10
Chilled	2.10
Dust	2.30

**Shovels and Spades—**

Association List, Nov. 15, 1902	40%
Avery Stamping Co.	40%

**Snow Shovels—**

Long Handle	\$3.25@3.50
Wood and Mail, D. Handle	
	\$3.75@4.00

**Sieves and Sifters—**

Hunter's Imitation	
	gro. \$9.50@10.00
Hunter's Genuine	
	per gro. \$12.00@12.50

**Sifters, Ash—**

Acme Ball Bearing Sales Co., Acme	
Automatic Ash Sifter, each	\$3.25
\$1 doz.	\$39.30

**Sieves, Seamless Metallic**

Mesh	14 16 18 20
Iron Wire	\$1.05 1.05 1.10 1.20
Tinned Wire	\$1.15 1.15 1.20 1.30

**Sieves, Wooden Rim—**

Nested, 10, 11 and 12 Inch.	
Mesh 18, Nested	doz. \$0.90@0.95
Mesh 20, Nested	doz. \$1.00@1.05
Mesh 24, Nested	doz. \$1.00@1.10

**Sinks, Cast Iron—**

Painted, Standard list:	
12 x 12 to 22 x 36 in.	60%
20 x 40 to 24 x 50 in.	50%
24 x 60 to 24 x 120 in.	40%
Barnes' low list:	
Up to and including 20 x 36 in.	50.45
20 x 40 to 24 x 50 in.	45%

**Skins, Wagon—**

Cast Iron	70@75.10
Steel	40@45%

**Slates, School—**

Factory Shipments.	
"D" Slates	50@50.10
Eureka, Unexcelled Noisecless	60.45 tons
Victor A, Noisecless	60.45 tons

**Slaw Cutters—See Cutters.****Snaps, Harness—**

German	40@40.10
Covert Mfg. Co.:	
Derby, 25%; Yankee, 30.2%; Yankee	
Roller	30.2%
High Grade, 40%; Trojan	40%
Jockey	25%

**Snaths—**

Scythe	55@60%
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**Snips, Tinners—See Shears.****Spoons and Forks—****Silver Plated—**

Good Quality	50.10@60.45
Cheap	60.60@10%
International Silver Co.:	
1917 Rogers Bros.	40.10
& Hamilton	50.10

**For the Table of "Current Metal Prices" see the First Issue of Every Month.**



